

THE JOURNAL

OF THE

Philippine Medical Association

*Devoted to the Progress of Medical Science and to the interests of the
Medical Profession in the Philippines
Manila, Philippines*

VOL. XXII

JUNE, 1946

NO. 6

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Original Articles

BLOOD BILIRUBIN DETERMINATIONS AS AN AID IN THE DIFFERENTIATIONS BETWEEN PEPTIC ULCER AND PORTAL CIRRHOSIS IN GASTRIC HEMORRHAGE ¹

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One of the most dramatic and most alarming symptoms of diseases of the gastrointestinal tract and/or its accessory organs is massive gastric hemorrhage resulting in profuse hematemesis. This is not only a dreadful episode for the patient and his family which almost shatters all hopes of recovery, but also a perplexing problem for the attending physician. The latter's diagnostic ability is many times taxed to the limit and speculative considerations often come to play. This is especially true of the types unheralded and unaccompanied by any symptom or set of symptoms indicative of any existing disease which may lead to such hemorrhagic attacks. Such diseases as new growth of the stomach or duodenum, hemorrhagic diseases like idiopathic purpura hemorrhagica, hemorrhages in deep jaundice, traumatic injuries of the stomach or duodenum, acute gastritis due to corrosives, simple peptic ulcers and hepatic disease like Banti's disease and portal cirrhosis are naturally considered. But because many of these diseases are almost always accompanied by definite histories, diagnostic symptoms, and important physical or laboratory findings, their recognition is often easy.

Two of these diseases however—peptic ulcer and portal cirrhosis—are often without definite diagnostic findings either before or during the hemorrhage, so that their recognition is very difficult if not impossible. If their recognition is not easy, their

¹Read before the 39th Annual Meeting of the Philippine Medical Association, May 9, 1946.

differentiation is even more difficult. These two diseases happen to be the most frequent causes of massive gastric hemorrhage in the Philippines. Their frequency is such that when profuse hematemesis, which is not preceded nor accompanied by any definite physical or laboratory findings, occur in an adult individual of either sex, peptic ulcer and portal cirrhosis are given the first consideration; and a great majority of these turn out to be due to either of these diseases. Since the two conditions require entirely different treatments, an early diagnosis is not only a scientific necessity but also an important prerequisite in the management and ultimate treatment of the disease. Any procedure, therefore, or means of differentiating between these two conditions would be a welcome addition to our diagnostic armamentarium.

Six cases who suffered from massive gastric hemorrhages resulting in hematemesis, form the basis of this report. Three of them were admitted in the Medical Wards of the Philippine General Hospital, two were private patients admitted in the Pay Section of the same Hospital, and the sixth, is an American internec admitted in a special ward for these patients, also in the same Hospital. Two of the charity patients died from subsequent hemorrhages, and the American internec died of acute generalized peritonitis. Their bodies were autopsied at the City Morgue and the cause of the hemorrhage was therefore accurately determined pathologically. The two private patients were both operated on after repeated massive hemorrhages, so that the cause of the hemorrhage was also accurately determined by direct vision and by direct palpation during the operation. The third charity patient did not die nor was he operated on during the hemorrhagic episode under consideration; but the history, the clinical, physical, laboratory and X-ray findings are so characteristic that there is very little doubt as to the diagnosis of the case.

REPORT OF CASES

CASE 1. Ricardo Nolan, male, Spaniard, 71 years old, lawyer, admitted on June 28, 1943. Personal History: well to do; widower, a gourmand and a habitual heavy alcoholic drinker. Past Diseases: nothing relevant; had no signs of chronic gastro-intestinal disorder.

Present Illness: Hematemesis was profuse, painless 5 hours before admission, apparently spontaneous. Melena noticed day following. On admission he was in a collapsed condition, rather pale. Pertinent physical findings: fairly well developed and fairly well nourished patient; heart and lungs apparently normal; abdomen—tympanic and scaphoid, no evidence of engorgement of superficial veins, no masses and no tenderness, spleen not palpable, no evidence of ascites.

Observation: Patient had 5 hematemesis in the ward. Was given repeated blood transfusions.

Laboratory examinations: Bilirubin determination (6/29) Bili. I — traces, Bili. II — none, Takata test — negative (—).

Impression at first given was portal cirrhosis, until the result of the bilirubin determination, Takata test and X-ray findings were known. X-ray of the stomach: the stomach showed hour glass contraction with the bismuth meal remaining in the cardiac or fundic portion. In the six-hour film, although most of the meal had gone down, yet one could still see the cardiac coated with the remaining contrast sub-

stance to make that portion quite clear. In this film one could visualize still the hour-glass contraction seen in the previous film. Due to these findings, the first consideration was the possibility of newgrowth infiltrative type, especially if functional spasticity could be entirely eliminated. It was also perhaps worthwhile having the Wassermann's test and the resolubility test.

Histological section: portion of the stomach sent for biopsy showed chronic peptic ulcer with acute exacerbation and hemorrhage, pyloric portion of the stomach. Operation and partial gastrectomy was performed.

CASE 2. The case of Dr. Manahan. Around the end of 1928, he began to have frequent attacks of epigastric pain which at times amounted only to some discomfort and tympanism. Occasionally he had sour eructations. These symptoms persisted till the end of February, 1929, when after feeling faint for some time he had profuse melena, after which he collapsed. He stayed 24 days in the Hospital and was apparently all right until June 1930 when he had to stay in bed on account of moderately severe epigastric pain and tympanism. Melena was slight this time.

For almost 2 years, he was apparently symptom-free, and then around the middle of 1932, he again noticed the slight melena, preceded by the usual epigastric discomfort and sour eructations.

In 1933, he was appendectomized. Since the last attack of epigastric pain and melena, he had 5 other attacks similar in nature, melena varying in amount from slight to profuse; in duration from 2 to 15 days but accompanied invariably by epigastric pain or discomfort, sour eructations and tympanism.

Finally, around the end of July of 1942 to August 2, 1942, he had profuse melena and hematemesis followed by collapse, for which 3 blood transfusions and a gastro-enterostomy were done, but nevertheless, the patient declined gradually and died. Blood extracted on the day of the operation was negative for both bilirubin.

CASE 3. Hipolito Niguidula, male, 31 years old, admitted for the first time on January 9, 1943. Chief complaints: epigastric pain, hematemesis and melena. Present illness: About three years before admission as burning pain localized at the epigastrium, occurring at around 11 o'clock in the morning, subsiding after the ingestion of food or coffee, only to recur after about two hours and again relieved by taking food. The pain occurred seldom at night or in the morning, and was not colicky in character, nor was it transmitted anywhere. After three days of this pain, he vomited about 1/3 urinalfull of blackish material and when he moved his bowels the following day, he noticed that his stools were also black. He sought medical attention, was given medicine taken by mouth and dieted on *lugao* and bananas for several days, after which the pain in the epigastrium was only occasional, but usually occurring when he was hungry and relieved by intake of food. He had become slightly pale since the onset of the illness. There was no history of fever or jaundice or acholic stools. Four days before admission there was recurrence of the vomiting of blackish material, amounting to about one-half urinalful; he also passed blackish stools. The epigastric pain became more or less persistent, so he sought admission. On admission he was afebrile, slightly pale; and he complained of epigastric pain, B.M. regular.

Pertinent physical findings: Fairly well developed, poorly nourished, pale patient. Conjunctivae, pale. Heart and lungs apparently normal. Abdomen symmetrical, slight tenderness of the epigastric region on deep pressure. Spleen and liver not palpable. Laboratory examinations: Blood rbc 2,550,000, wbc 11,400, neutrophils 80%, lymphocytes 20%, Hemoglobin 7 gms. (Sahli): rbc 3,450,000, wbc 8,050, neutrophils 72%, lymphocytes 28%. Urine normal. Feces showed traces of occult blood in one examination.

Gastric Juice Analysis: (First examination) First hour—free 75° total 88° combined 15°: Second hour — Free 50° total 65° combined 12°; (Second examination) First hour — free 54° total 67° combined 10°; Second hour — free 56° total 69° combined 11°. Bilirubin determination (January 19, 1943) B-1 traces, B-2 none, X-ray of the stomach: There was irregularity of the mucous folds in the antral and duodenal bulb region suggestive of chronic ulcer with certain gastritis. X-ray of the lungs: prominence of both hila, especially right. Diagnosis: Peptic ulcer, chronic with hemorrhage.

CASE 4. John B. Taylor, 68 years old, male, American, was admitted for the first time on November 27, 1943. Chief complaints: epigastric pain, hematemesis, nausea, and general body weakness. Present illness apparently started 6 months ago as dull aching pains at the region of the epigastrium, unrelated to meals, coming on and off at irregular intervals and of varying duration. This was accompanied occasionally by sour eructations. About two weeks before admission, he was apparently feeling well when he suddenly became nauseated and vomitted a large amount of dark clotted blood. He became dizzy and afterwards fainted. Following this hematemesis, he passed blackish stools for several days. Since then he felt rather weak, with marked pallor and occasional nausea and dizziness. Laboratory examination done while he was still in the St. Tomas Internment Camp Hospital showed persistent occult blood in the feces up to the time of his admission here. Blood examination showed a rapidly increasing anemia—from 2,000,000 rbc on the day after the hemorrhage to 1,500,000 ten days later. On admission the patient was febrile (37.5°C). He could still walk, but he suffered occasional epigastric pains, dizziness, and nausea. He vomitted but without blood. He had been constipated for the last three days before admission.

Pertinent physical findings were: well developed and well nourished patient, conjunctivae, pale, no icterus. Heart sounds rather weak, but regular. No adventitious sounds. Lungs normal. Abdomen slightly scaphoid, lax, with no rigidity or tenderness. Integument pale.

Laboratory examinations: Blood—rbc 1,650,000, wbc 7,850, neutrophils 79%, lymphocytes 21%. Urine normal. Takata test: negative (—).

Gastric Juice Analysis	First Hour	One hour after test meal
Free HCL	72°	74°
Total acidity	78	83
Combined acidity	3	6
Occult blood	+	+

Bilirubin determination (11/29) B-I none, B-II none.

Observations: The patient developed very severe epigastric pains 8 days after

admission in the ward. The pulse became very weak, almost imperceptible. After having been given blood transfusion of 250 cc., he became slightly stronger; but the abdomen was noticed to be slightly bulging and tympanitic. On the following day the abdomen continued to be tympanitic without much rigidity, and another blood transfusion was given; but he did not react, and he died soon after.

Pathologic Diagnosis; Peptic ulcer, perforated with secondary peritonitis.

CASE 5. Jose Sanchez, male, 30 years old, jobless, from Balanga, Bataan, was admitted for the first time on September 6, 1943. Chief complaints: left hypochondriac and epigastric pain, and hematemesis. Present illness: Five months in duration as recurrent attacks of epigastric and left hypochondriac pain, which apparently were not related to meals. While in Corrigidor, one month after the onset, he had malaria accompanied by epigastric discomfort, nausea and vomiting of blood, once amounting to a cupfull, but no melena. Two weeks later, while in Capas, he had persistent epigastric and left hypochondriac pain, occurring for two weeks. After his release, he was confined in San Lazaro Hospital for fever and cough and discharged improved with the diagnosis of bronchopneumonia. After his discharge, he had afternoon fever for four days and frequent bowel movements, the stools being neither bloody nor mucoid. On the night previous to admission, he had severe pains over the left hypochondrium, accompanied by cold clammy perspiration. He also vomited blood three times, consisting of fresh and clotted blood amounting to one half urinalfull. For this symptom he was admitted in this hospital. Past disease: Had malaria in 1939 and 1940. On admission he was very weak, pale; and he vomited plenty of blood amounting to 1/3 cupfull. Pertinent physical findings: Fairly well developed and fairly well nourished. Conjunctivae rather pale. Sclerae, subicteric. Heart and lungs apparently normal. Abdomen showed a palpable spleen about 4 fingers below the costal arch. Liver not palpable. No ascites. No rigidity but with moderate tenderness at the epigastrium and left hypochondrium. Integument pale. No prominent blood vessels. Previous records show that he was admitted in 1940 and was diagnosed as a case of malaria, chronic.

Laboratory examinations: Blood — rbc 2,120,000; wbc 4,800, neutrophils 71%, lymphocytes 22%, monocytes 7%. Urine and feces were apparently normal. Blood smears positive for rare ring forms of benign tertian malaria. Bilirubin determination: (9/12) B-1 0.658, B-2 1.110; (9/8) B-1 0.419, B-2 none. Takata: (9/12) negative, (9/8) negative.

Observations: The patient stayed for 7 days in the ward and during this whole stay he vomited 5 times, the vomitus consisting of fresh and clotted blood. He was semiconscious most of the time and talked incoherently. Final diagnosis: Portal cirrhosis with hemorrhage (?); Malaria, chr.; Anemia, severe; sec.; hypostatic pneumonia. Anatomical diagnosis: Cirrhosis, portal; splenomegaly; hemorrhage, intestinal tract; pneumonia, hypostatic; anemia, acute, secondary.

CASE 6. Candido Victorino, male, 48 years old, driver, admitted for the first time on July 7, 1942. Chief complaints: melena and hematemesis, general body weakness. Present illness: For several years before admission the patient had been suffering from vague epigastric pains which was not related to meals. Since then pain had been persistent. There is definitely no history of sour eructation, although he

had occasional nausea with acutal vomiting. There was no previous history of jaundice, although one week before admission he had noticed that his sclerae were slightly yellowish. This yellowish discoloration of his sclerae persisted up to the time of his admission. About three days before admission, he started vomiting blood profusely and passed dark colored stools. Once in a while the vomiting of blood subsided, but on the day of admission, he again vomited profusely. For two months before admission, he had been coughing occasionally, accompanied by thick mucoid expectoration. Together with this he had occasional rise of temperature. There was no appreciable loss of flesh. On admission he was afebrile and he complained of marked general body weakness and occasional vomiting of blood.

Pertinent physical findings: Fairly well developed, somewhat poorly nourished patient. Sclerae subicteric. Heart apparently normal. Lungs showed impaired resonance over both apices and right base with crepitant rales on the left apex. Abdomen: liver and spleen could not be palpated, and there was no evidence of fluid; superficial abdominal veins prominent; no tenderness and no rigidity. Extremities showed no edema.

Laboratory examinations: Takata test +++ Bilirubin determination (7/7) B-I 0.822; B-2 traces. Patient stayed for 11 hours in the ward and died.

Final diagnosis: Portal cirrhosis; P.T.B. chronic. Anatomical diagnosis: Cirrhosis, portal with solitary newgrowth at junction of right and left lobe. Oesophageal varices; blood small and large intestines; fibroid T.B. right apex, lungs; pleurisy with effusion; right with bloody hemorrhagic fluid; miliary T.B., apex right.

DISCUSSIONS

By reviewing and analyzing the clinical abstracts on each of these patients, it will be readily seen that either peptic ulcer or portal cirrhosis could explain the repeated hemorrhagic episodes in all of them. With the exception of Case No. 3 where the clinical, laboratory, and X-ray findings are all in favor of peptic ulcer, all cases show findings that can hold true with both diseases.

Take Case No. 1 for example. The absence of symptoms referable to the stomach or upper gastro-intestinal tract before or during the hemorrhage will make one strongly suspect portal cirrhosis as the cause of the hemorrhage. The X-ray report in this case points strongly to the stomach as the seat of the pathologic change, although functional spasticity could also produce the same picture.

Case No. 2 showed vague abdominal symptoms which were interpreted by the patient and his close associates as symptoms of peptic ulcer. The hemorrhagic episodes in the form of melena lend support to this contention, but these can also be found in a case of portal cirrhosis. A patient with such symptomatology—vague abdominal complaints with gastric hemorrhages in the form of melena and hematemesis once in a while — died in one of the hemorrhagic attacks, giving the clinical impression of peptic ulcer with hemorrhage or of portal cirrhosis. Partial autopsy on the body revealed a duodenal ulcer.

The history and the clinical, laboratory and X-ray findings in Case No. 3 are all in favor of the clinical impression of peptic ulcer. Although this was not verified by operation or by autopsy findings, the diagnosis appears well supported.

Case No. 4 was apparently symptomless up to 6 months before admission when

he began to have dull aching pains at the epigastric regions. These pains were not related to meals. They were variable in duration and came on and off at irregular intervals. These symptoms could be those of either disease, but the absence of similar symptoms previous to 6 months before admission to the Hospital makes the case appear to be more of portal cirrhosis, although the gastric contents showing slightly increased acidity, are more in favor of peptic ulcer.

In case No. 5 the clinical impression of peptic ulcer is well supported by the clinical history and physical findings. Such findings as subicteric sclerae and palpable spleen — usual findings in portal cirrhosis — could be explained by the malaria that this patient also had. The absence of ascites and the absence of any prominent vessel or spiderweb angiomata in the abdominal chest walls fail to suggest or to support any impression of portal cirrhosis.

Case No. 6 showed several findings pointing to portal cirrhosis: the history of slight yellowish discoloration a week before admission, the subicteric sclerae, the prominent superficial abdominal veins, and the positive Takata in the blood on admission. But the absence of ascites and palpable spleen and the history of vague epigastric pain with occasional vomiting are indicative of peptic ulcer than of portal cirrhosis. Summing up all the findings on this patient, no definite diagnosis could be made, although a final impression of portal cirrhosis was arrived at.

Case No. 7 showed no definite symptoms indicative of either disease, except the palpable spleen which is more in favor of portal cirrhosis.

The table shows clearly that a sharp contrast between the group of "peptic ulcers" (Cases 1, 2, 3, & 4) and that of "portal cirrhosis" (Cases 5, 6 & 7) is found in the amount of B-I in the blood. The first group (peptic ulcers) shows practically no bilirubin while the second group (portal cirrhosis) shows definite amounts of B-I. Theoretically speaking this is as it should be, for it is well-known that portal cirrhosis is a degenerative disease leading to necrosis and disappearance of liver cells (1). The liver must, therefore, be functionally deficient, although known functional tests give disappointingly normal results. (2)

However, by "special" bilirubin determinations (3) (4), functional disturbances of the liver and interference in the outflow of bile can be accurately measured. By special bilirubin determinations, therefore, diseases associated with functional defects of the liver can be differentiated from those not accompanied by deficient liver functions. Since peptic ulcer is not known to be associated with any liver affection unless there is a concomitant "gall-bladder" disease, liver functional deficiency is therefore absent in this disease. But in portal cirrhosis a functional disturbance has always been found (3), and in its absence a diagnosis of portal cirrhosis has been given with caution.

Our findings in the last three years on patients with portal cirrhosis admitted in the Medical Wards of the Philippine General Hospital show that B-I is always present in definite amounts (3). When it is absent, a diagnosis of portal cirrhosis, in our experience, appears not fully supported.

To illustrate this point, an interesting case is herein briefly summarized. A middle-aged man from Pampanga was admitted in the Medical Wards of the Philippine General Hospital complaining of painless enlargement of the abdomen of a few months duration; there was also slight edema of the lower extremities. There was

nothing relevant in the past history, except a questionable malarial attack several years before. Physical examination showed a well-developed but slightly emaciated walking patient, with nothing pertinent in the head and neck. The abdomen bulged markedly showing clear evidence of fluid; surface abdominal veins were prominent and the spleen was definitely palpable; the liver was questionably palpable at the region just below the xyphoid process; both lower extremities were slightly edematous.

On paracentesis the abdominal fluid was found thin, yellowish, and definitely transudate. The more common laboratory data showed nothing definite: blood smears showed no malarial parasites after repeated examinations. Takata's test in the blood was strongly positive. The blood showed neither B-I nor B-II. The attending physicians gave a diagnosis of portal cirrhosis. This was confirmed by senior clinicians. The diagnosis of portal cirrhosis in this case could not be questioned especially on clinical grounds; but, contrary to our findings in this disease so far, no B-I was found in the blood. While we could not get away from the diagnosis of portal cirrhosis, we included "malarial endothelosis" and parasitic (*Schistosomiasis*) liver disease as possibilities. The syndrome of ascites, palpable spleen and distended abdominal veins is not impossible nor even unusual in malaria infestation as shown by Sison (A. G.) and his co-workers (5), *Schistosomiasis* of the liver has frequently been seen to manifest physical findings similar to those of advanced portal cirrhosis.

This patient died after an operation for the removal of the spleen. Autopsy revealed a slightly enlarged and indurated liver which on microscopic examinations showed numerous ova of *Schistosoma*. There was neither gross nor microscopic findings suggestive of portal cirrhosis. It was revealed after the autopsy findings had been known, that the patient had stayed for sometime in a place known to be endemic for *Schistosoma*: Thus syndromes pointing to portal obstruction, unless accompanied by definite evidences of liver dysfunction (presence of B-I in definite or significant amount) can be the results of pathologic processes other than portal cirrhosis.

The two diseases herein considered, therefore, as causes of massive gastric hemorrhages leading to profuse hematemesis can possibly be differentiated by their association or non-association with destructive processes of the liver resulting in hepatic hypofunction. While clinically, physically, and with the aid of laboratory and X-ray findings a differentiation between the two is often possible, such findings may not be sufficiently definite to allow definite differentiation. The presence of B-I in the blood in significant amounts, or its complete absence, may therefore serve as distinct help in their differentiation—its presence favoring portal cirrhosis while its absence, peptic ulcer.

SUMMARY AND CONCLUSIONS

1. Seven cases with massive gastric hemorrhage resulting in profuse hematemesis form the basis of this report. Four of these were admitted in the Medical Wards of the Philippine General Hospital, two were patients admitted in the Pay Section of the same Hospital, and the sixth was an American internee admitted in a special ward for internees of the same hospital.
2. Four of these patients died, and a complete pathologic report for each was

available. Two were operated on, and accurate operative findings were also available for these patients. One had no operative or autopsy verification of the clinical impression. But this appears well supported by clinical, laboratory and X-ray findings.

3. Four of these patients were found suffering from peptic ulcer and the other three, from portal cirrhosis. The patients with peptic ulcer showed practically no bilirubin in the blood (Whether B-I or B-II) while those with portal cirrhosis showed significant amounts of B-I.

4. When clinical, laboratory, or X-ray findings are not sufficiently distinct for the differentiation of these two conditions in cases of massive gastric hemorrhage, the bilirubin (B-I) content of the blood may help in the differentiation. Peptic ulcer is not accompanied by B-I in the blood, while portal cirrhosis is always accompanied by functional disturbances of the liver. This is shown by the constant presence of B-I in the blood.

NAME OF PATIENTS	CLINICAL DIAGNOSIS	AMOUNT OF B-1	AMOUNT OF B-2	TAKATA	OPERATIVE OR AUTOPSY FINDINGS.
1. R. M.	PORTAL CIRRHOSIS Or Peptic Ulcer	Traces	None	Negative	Peptic Ulcer.
2. D. G. M.	Peptic Ulcer	None	None	Negative	Peptic Ulcer.
3. H. N.	Peptic Ulcer	Traces	None		Not operated; not dead (Peptic ulcer)
4. J. B. T.	Portal Cirrhosis or peptic ulcer	None	None	Negative	Peptic Ulcer.
5. J. S.	Peptic Ulcer or Portal Cirrhosis	0.658	1.110	Negative	Portal Cirrhosis
6. C. V.	Peptic Ulcer or Portal Cirrhosis	0.822	Traces	Mod. Positive.	Portal Cirrhosis.
7. A. L.	Cerebral Malaria? Portal Cirrhosis?	0.740	Traces	Negative	Portal Cirrhosis.

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INCIDENCE OF CARDIAC ARRHYTHMIAS

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This paper seeks to show the incidence of the most common types of cardiac arrhythmias in different cardiac and non-cardiac conditions and in different age groups. Irregularities of the heart beat are often significant of organic heart disease, but at times they can be functional in origin. Electrocardiography is considered one of the best instrumental methods in the study of cardiac arrhythmias. Physical examination, consisting mainly in studying the rhythm and rate of the heart beat at the precordium and of peripheral pulses, and in establishing the pulse deficits—in many instances, physical examination is accurate enough; but it can, at times, be inadequate and inconclusive, and instrumental methods, particularly electrocardiography, has to be employed.

This paper describes the diagnoses of the various types of cardiac arrhythmias by means of electrocardiographic tracings done, on patients in the Wards and Dispensaries of the Philippine General Hospital, the big majority of whom are from the Department of Medicine. The period of observation was from March, 1941 to October, 1942. A total of 838 electrocardiographic tracings are included in the series. The records and charts of the various cases used were carefully analyzed for the main cardiac and non-cardiac diagnoses; and, whenever the cases had come to autopsy, more weight was given to the post-mortem findings than to the ante-mortem diagnosis. The criteria advocated in the *Nomenclature and Criteria for Diagnosis of Diseases of the Heart* by the Criteria Committee of the New York Heart Association (fourth edition, 1939) were adhered to in making the main cardiac diagnoses.

The principal cardiac diseases included and the main diagnostic points for each are:

(1) Arteriosclerotic heart disease — “cases of heart disease showing definite evidence of arteriosclerotic disease in any of the palpable arteries or retina, or fluoroscopic evidence of sclerosis in the arch of the aorta, or else belongs to the age group where arteriosclerosis is apt to occur, provided there are characteristic cardiac signs or symptoms”.

(2) Hypertensive heart disease — “persistent hypertension associated with heart disease”; hypertension is “present when the systolic blood pressure is persistently above 140 mm Hg or the diastolic pressure above 90 mm Hg.”

(3) Cor pulmonale — “when there is cardiac insufficiency, there is present a specified pulmonary disease, and there is evidence of enlargement of the right ventricle”.

(4) Rheumatic — “when there is history of polyarthritis, muscle or joint pains,

¹ Read before the 39th Annual Meeting of the Philippine Medical Association, held May 10, 1946.

subcutaneous nodules, chorea, and evidence of structural lesion of the heart plus a history of periods of recurrent fever and cardiac insufficiency.

(5) Syphilitic — "when there is history of syphilitic infection and evidence of one of the structural lesions of the aorta; a characteristic structural lesion of the aorta without history of syphilis but with a positive Wasserman reaction; a characteristic structural lesion of the aorta together with evidence of syphilitic disease elsewhere, such as cerebrospinal syphilis even in the absence of a positive Wasserman reaction or a history of syphilitic infection."

(6) Beriberi — when there is heart insufficiency associated with polyneuritic symptoms and other evidences of avitaminosis B₁.

(7) Congenital heart disease — when there are present characteristic radiologic findings and physical signs.

(8) Hyperthyroidism — when there "is evidence of hyperthyroidism with abnormal cardiac function such as sinus tachycardia, paroxysmal or permanent auricular fibrillation or flutter, or occasional premature beats."

The standards in the *Nomenclature and Criteria for Diagnosis of Diseases of the Heart* were used in making the electrocardiographic diagnoses. Whenever digitalis or allied drugs had been used on the patient, an attempt was always made to determine whether the observed arrhythmia was produced by the digitalis. If so, was discarded from the series. The following most common types of cardiac arrhythmia were included in the study: sinus arrhythmia, auricular fibrillation, auricular flutter, second degree auriculo-ventricular block, and auricular and ventricular premature beats. The observations obtained are summarized in the following tables:

TABLE 1—Sinus Arrhythmia

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Normal	1	5	5	3	3	2	0	0	19
Rheumatic	1	5	1	1	1	0	0	0	9
Arteriosclerot.	0	0	0	0	1	0	2	3	6
Hypertensive	0	0	0	1	1	1	2	1	6
Hypovit. B ₁	0	0	2	0	1	0	0	0	3
Thyrototoxicosis	0	0	0	1	0	1	0	0	2
Syphilis	0	0	1(?)	0	0	0	0	0	1
Toxic	0	0	1	0	0	0	0	0	1
Congenital	1	0	0	0	0	0	0	0	1
TOTAL ---	3	10	10	6	7	4	4	4	48

TABLE 2—Auricular Flutter

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Rheumatic	0	0	0	2	0	0	0	0	2
Hypertensive	0	0	0	0	1	0	0	0	1
TOTAL ---	0	0	0	2	1	0	0	0	3

TABLE 3—Auricular Fibrillation

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Normal	0	0	0	0	0	0	0	0	0
Rheumatic	0	3	12	10	9	2	2	0	38
Arteriosclerot.	0	0	0	0	0	3	1	2	6
Hypertensive	0	0	0	0	0	3	2	0	5
Thyrotoxicosis	0	0	2	0	2	0	0	0	4
Cor Pulmonale	0	0	0	0	0	1	0	0	1
TOTAL —	0	3	14	10	11	9	5	2	54

TABLE 4—Second Degree Auriculo-Ventricular Block

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Normal	0	0	1	0	0	0	0	0	1
Rheumatic	0	3	0	0	0	0	0	0	3
Arteriosclerot.	0	0	0	0	0	0	1	0	1
TOTAL —	0	3	1	0	0	0	1	0	5

TABLE 5—Auricular Premature Beats

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Normal	0	0	1	0	0	0	0	0	1
Hypertensive	0	0	0	0	0	1	0	0	1
TOTAL —	0	0	1	0	0	1	0	0	2

TABLE 6—Ventricular Premature Beats

Asso. Disease	Age Incidence								Total
	0-9	10-19	20-29	30-39	40-49	50-59	60-69	70-79	
Normal	0	1	0	1	0	0	0	0	2
Rheumatic	0	4	3	4	2	2	1	0	16
Arteriosclerot.	0	0	0	0	0	1	0	1	2
Hypertensive	0	0	0	2	1	5	3	1	12
Thyrotoxicosis	0	0	3	0	0	1	0	0	4
Cor Pulmonale	0	0	0	0	0	1	0	0	1
Congenital	0	1	0	0	0	0	0	0	1
Anemia (malaria)	0	0	1	0	0	0	0	0	1
Hypovit. B ₁	0	0	0	1	1	0	0	0	2
TOTAL —	0	6	7	8	4	10	4	2	41

The next table summarizes the incidence of the above forms of cardiac arrhythmia among the various age groups:

TABLE 7—Cardiac Arrhythmia Among Age Groups

Cardiac Arrhythmia	Age Incidence							Total	
	0-9	10-19	20-29	30-39	40-49	50-59	60-69		70-79
Sinus Arrhythmia	3	10	10	6	7	4	4	4	48
Aur. flutter	0	0	0	2	1	0	0	0	3
Aur. fibrillation	0	3	14	10	11	9	5	2	54
Sec. degree A-V block	0	3	1	0	0	0	1	0	5
Aur. premature beats	0	0	1	0	0	1	0	0	2
Vent. premature beats	0	6	7	8	4	10	4	2	41
TOTAL —	3	22	33	26	23	24	14	8	153

From the tables above we find that below the age of 10, sinus arrhythmia is the only type of cardiac arrhythmia observed. This form of irregularity is observed in all the age groups, but almost 50% (23 out of 48 cases) of it is seen below the age of 30. Auricular flutter, auricular fibrillation, and second degree auriculo-ventricular block are found mainly between the ages of 10 and 50 years, the same age period in which there is a high incidence of chronic rheumatic affection of the heart. Ventricular premature beats are seen mostly between the ages of 10 and 60, and has its highest incidence in the age-group of 50-59 years. Summarizing the total incidence of each type of cardiac arrhythmia, we find that in the 153 cases of cardiac arrhythmia studied, sinus arrhythmia represents 31.4%, auricular flutter 1.9%, auricular fibrillation 35.3%, second degree auriculo-ventricular block 3.3%, auricular premature beats 1.3%, and ventricular premature beats 26.8%.

The next table summarizes the incidence of the various types of cardiac arrhythmia among the most common cardiac and non-cardiac conditions associated with cardiac arrhythmias:

TABLE 8—Cardiac Arrhythmia Among Diseases

Associated Condition	Sinus Arrhy.	Aur. Flutter	Aur. Fibrillation	2nd de gr. A-V Block.	Aur. Prem. Beats	Vent. Prem. Beats	Total	Per cent
Normal	19	0	3	1	1	2	23	15.0
Rheumatic	9	2	38	3	0	16	68	44.4
Arteriosclerot	6	0	6	1	0	2	15	9.8
Hypertensive	6	1	5	0	1	12	25	16.3
Thyrotoxicosis	2	0	4	0	0	4	10	6.5
Myopovit. B ₁	3	0	3	0	0	2	8	5.2
Cor Pulmonale	0	0	1	0	0	1	2	1.3
Congenital	1	0	3	0	0	1	5	3.3
Anemia	0	0	0	0	0	1	1	0.7
Syphilis	1	0	0	0	0	0	1	0.7
Toxic	1	0	0	0	0	0	1	0.7
TOTAL —	48	3	54	5	2	41	153	100.0

From this table it is clear that, in normal individuals, sinus arrhythmia is the only form of cardiac irregularity that has a high incidence. There is no incidence what-

soever of auricular fibrillation or auricular flutter in normal subjects. In rheumatic heart disease, auricular fibrillation is the most prevalent form of cardiac arrhythmia. Ventricular premature beats also have a high incidence. In arteriosclerotic and hypertensive subjects, almost all the various forms of arrhythmia are seen with none having any markedly high incidence, except ventricular premature beats in hypertensive heart disease. In thyrotoxicosis auricular fibrillation and ventricular premature beats are found the most common types of cardiac irregularity. Sinus arrhythmia and ventricular premature beats are the forms of cardiac irregularity seen in the cases of hypovitaminosis B₁ observed. In other conditions studied, there are only isolated cases of cardiac arrhythmia, probably because not enough cases were observed. On the whole, it can be seen that, out of the 153 cases studied with cardiac arrhythmia, only 23 (or an incidence of 15.0%) are seen in normal individuals; and of these, 19 are sinus arrhythmia, which is considered physiological in children below the age of 14. In our studies, 13 of these cases of sinus arrhythmia belong to the age groups of 0-9 years and 10-19 years. All the other cases of cardiac arrhythmia are seen associated with some form of pathologic condition, either specifically of the heart or involving the heart in some way.

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DIGENIA SIMPLEX AS A SUBSTITUTE IN THE TREATMENT OF ASCARIASIS¹

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INTRODUCTION

The practical usefulness of any anthelmintic may be considered under seven headings, namely: (1) Availability, (2) Cost, (3) Preparation of the patient prior to the administration of the drug, (4) Effectivity, (5) Contraindication, (6) Toxicity, and (7) Ease of the preparation from the raw material. To be an ideal anthelmintic it must satisfy the following requisites: First, there must be a local source or sources of the raw materials from which the active principle is obtained; and the source must be abundant. Second, the medicine must be relatively cheap. A drug both locally prepared and locally available is generally cheaper than one imported from other countries. This, however, is by no means always the rule. Third, the drug should not require preliminary preparation of the patient before it is administered. The extra precaution or preparation of the patient before and after the main anthelmintic is administered sometimes serves as a drawback. At times this is more frightening to patients than the ascaris infestation itself. An ideal anthelmintic must, therefore, not need such preliminaries. Fourth, the drug must be highly effective in the expulsion of the worms. Fifth, the drug should have no contraindication. The practical usefulness of an otherwise efficacious anthelmintic will be limited by the risk of its administration. In order that the drug can command popularity, it must be, in addition to other desirable qualities, one which can be administered under any circumstance. Sixth, the drug must have a relatively low toxicity — or, better still, non-toxic. Toxicity and contraindication of a drug run *pari-pasu* with each other. The toxicity of a drug has always been a good excuse for many physicians to avoid its use, especially if the margin of safety of an effective dose is very narrow. An ideal anthelmintic must, therefore, be devoid of any toxic effect. At best, if it has some undesirable effects, there must be a wide margin of safety. It must not be forgotten that "patients and not diseases are treated." Seventh, the preparation of the medicine must be easy. The ease, simplicity, and absence of many complicated apparatus in the preparation of the drug are assets that can not be too greatly emphasized. It may truly be said that these attributes may even outweigh some undesirable qualities of the drug. Hence, preference must be given to one that can be easily prepared, especially if the other requirements have been satisfied.

OBJECTS OF THE INVESTIGATION

This study was first conceived in the early part of the Japanese occupation when drugs became more scarce, and prices rose higher, day by day. By and large, we

¹ Read at the 39th Annual Meeting of the Philippine Medical Association, held May 10, 1946.

have always depended on other countries, especially the United States, for medicines used in the treatment of intestinal parasitism—of all other diseases, for that matter. The medicinal stock of the country dwindled gradually to exhaustion at about the end of the Japanese rule; so that, by the latter part of the occupation, an individual who was so unfortunate as to fall ill, ran the risk of dying without receiving any medical treatment.

Although, ordinarily, ascariasis does not seem to produce any appreciable harm, yet it undermines the health of the individual affected to some degree. Hence, the necessity of eliminating the worms.

The objects of our study are to determine (1) if *Digenia simplex* is capable of expelling ascaris from a patient, (2) the extent or degree of effectiveness, (3) contraindications if there are any, and (4) toxicity.

MATERIALS AND METHODS

In this study, we made use of our patients in the Urban Health Demonstration Unit, popularly known to the public as Paco Health Center, and medical students who volunteered to be treated with our preparation. The *Digenia simplex*, a seaweed, was secured at the instance of the senior author, from the north-eastern coast of Isabela Province. This seaweed is found in abundance, not only in this region, but also in the eastern coast of the entire length of Palawan.

Having no guide to start with, we distributed the crude drug in packages of 10 and 15 grams each — the former to children below 7 years of age; and the latter, to children 7 years and older. This dosage was based purely on experience. The patient was instructed to boil the seaweed in about one glass of water for a few minutes and then to drink the extract. It did not take long for us to realize that the idea was not practical on account of the high cost of fuel. We abandoned the plan and decided to prepare the medicine ourselves. After a few treatments, we were convinced that a highly concentrated decoction is more desirable, as many of our patients were young children to whom the medicine was more easily administered if its bulk was smaller. Usually we prepared a kilo of the seaweed in 6 liters of water, and boiled the seaweed until the liquid was reduced, so that the concentration of the drug was 50% to 100%. In the latter part of our investigation, however, we fixed the strength of our decoction at 100%. After not more than 10 cases were treated, we decided to increase our dosage to 15 grams for children below 7 years of age and 20 grams for children 7 years and older. This dosage was also arbitrary. In a 100% preparation, 1 c. c. presumably contains what 1 gram of the raw materials would have of the active principles; and we speak of it as containing 1 gram of *Digenia simplex*.

Each patient was required to bring stool specimen for examination. If found positive for ascaris ova, a dose of the decoction was administered. Then the patients were instructed to report to us whether ascaris was expelled or not in a period of one week; whether the worms were expelled dead or alive; whether they were expelled in the process of defecation or came out alone; and if they came out through the mouth. We also required them to remember the time of expulsion of the worms, in order for us to be able to determine how soon the worms were expelled after the administration of the drug; and to note any undesirable effect resulting from taking

the drug. In every case, we tried to make a personal follow-up in the homes of the patients everyday up to the seventh day. In other cases, especially when the patients lived in another district, we required them to bring us the worms expelled for check up; but we recognized the difficulties arising from this. Then from 1 to 7 days after the first expulsion of worms, we required them to bring a sample of stool specimen, in order to determine if the stool continued to be positive for the ova of the parasites.

In a few cases, we administered the drug without first examining the stool. The patients, however, gave a history of passing out worms either through the mouth or through the anus. Except for the preliminary stool examination, this groups was handled in exactly the same way as the first group. To satisfy our curiosity, we administered the drug to a few whose stools were negative for ova of the parasites.

RESULTS AND OBSERVATIONS

During the liberation of Manila, the raw data of our investigation were all burned. Fortunately, the rough draft of our progress report was salvaged in the ruins of the Institute of Hygiene Building. This draft contained only about half of the total number of cases under study. Based on these few cases, we are presenting our observations.

First, we noted that the longer we boiled the *Digenia simplex*, the more effective it became in expelling out worms; but boiling it more than four hours would not increase its effectivity any further. Second, no undesirable effects were noted following administration of the drugs in the dose mentioned above. Third, the drug could be administered under any circumstances before, during, or after meals; and there seemed to be no need to prepare the patient before the drug was administered — such as dieting or — giving of purgative and enema. The drug was administered both in cases of purely intestinal parasitism and in those with concomitant diseases. Fourth, the efficacy of expulsion was 73.61% for the group with a preliminary stool examination; and 84.69, for the other group for which no stool examination was possible before the administration of the drug. These findings are shown in the following table:

TABLE 1. *Effectivity of Worm Expulsion with Digenia simplex.*

With Stool Examination Prior To Initial Treatment		Without Stool Examination Prior To Initial Treatment	
Number expelling ascaris	Number not expelling ascaris	Number expelling ascaris	Number not expelling ascaris
120	43	22	4
163		26	

We had 27 additional cases with negative stool examination to whom we administered the drug. Two of these passed out adult ascaris a few hours following the administration of *Digenia simplex*. In both cases no verification was made as

to the sex of the worms. If the worms were males that would explain the negative stool examination. If, on the other hand, the worms were female, the only possible explanation for the negative stool is that the eggs were few and that no concentration method was followed in any of the stool examination.

C O N C L U S I O N

Based on the cases we are presenting, *Digenia simplex* seems to have a bright future as a substitute in the treatment of ascariasis and possibly of other intestinal worms. Our observations have led us to make the following conclusions:

(1) The effectiveness of the drug (73.61%) holds a big promise, especially if we consider it together with other qualities that it possesses.

(2) The drug is non-toxic, a requisite which makes it superior to all other drugs commonly used in the local treatment of intestinal parasitism.

(3) The drug can be administered under any circumstances without the necessity of preparing the patient prior to the actual taking in of the medicine.

(4) The ease of preparation and the local availability and abundance of the raw material are added advantages over those imported from other countries.

THE HYPERALIMENTATION TREATMENT OF PEPTIC ULCER WITH AMINO ACIDS (PROTEIN HYDROLYSATE) AND DEXTRI-MALTOSE*

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INTRODUCTION

In the course of studies on the effect of a hyperalimentation regimen with high caloric and high amino acid feedings, (using a mixture of amigen and dextri-maltose) on convalescence after gastrectomy (1), it was thought advisable to try the regimen in the preoperative management of some cases. Accordingly, four patients with peptic ulcer, R. B., M. K., J. B., and F. P. were given this treatment. All had epigastric distress, one had persistent vomiting, and two had occult blood in the stools. All experienced relief of distress in twenty-four hours after treatment was instituted; the vomiting stopped in twenty-four hours and the occult blood disappeared in four days. All gained from 3.5 to 4.7 kg. in from eight to ten days. The return of strength and well-being was prompt and striking in all, and one patient left the hospital, refusing operation. Three decided to undergo operation, eight and ten days respectively after the initiation of the regimen, and in two of them (R. B. and J. B., table 1) the ulcers were found still to be present; in the third (M. K.), an ulcer scar was found.

The striking clinical improvement obtained, suggested that this feeding regimen could be a satisfactory treatment for peptic ulcers, and it was tried out in twenty-six more cases. The results of this study, together with those obtained in the four original cases, are presented here.

CLINICAL MATERIAL

This includes twelve cases of duodenal ulcer, five of combined duodenal and gastric ulcer, seven of gastric ulcer, one of suspected marginal ulcer, and one of

* Reprinted with permission from *Gastroenterology*, Vol. 5, No. 1, July, 1945, except the Addendum which appears on page 254 of this issue.—Editor.

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The work described in this paper was done under a contract recommended by the Committee on Medical Research between the Office of Scientific Research and New York University. The Amigen and dextri-maltose used were supplied by the Mead-Johnson Company of Evansville, Indiana. The experimental protein hydrolysate was supplied by E. R. Squibb & Sons.

radiologically confirmed marginal ulcer. The criteria of therapeutic efficacy were time of disappearance of symptoms, improvement in roentgenologic findings, gain in weight and gain in strength as measured by a bedside ergograph (2). The gastric pH and acidity, free as well as total, was determined in eighteen cases before treatment. The effect of the feeding mixture on the gastric pH and acidity was studied in only three cases. The nitrogen balance was determined in fourteen, as was the plasma, alpha-amino-acid level (3), the blood proteins and hematocrit reading. Except for the six cases complicated by frank hemorrhage, in all except one the patient was semi-ambulatory; that is, in the hospital but not confined to bed. The one exception, P. B. was treated in bed at her home. The length of ulcer history varied from one month to twenty years. Fourteen were "intractable" cases; that is, the symptoms had not improved on complete bed rest and strict Sippy treatment (with or without amphojel) after from one to five weeks. One person had a history of perforation five years previously, and one had a perforation five years before the present attack. Six patients had had profuse hemorrhage, three with hematemesis and three with melena; six had six-hour gastric retention, respectively 20%, 50%, 60%, 70%, 90% and "complete." Three had signs of deep penetration of the ulcer.

THE TREATMENT

Nitrogenic and caloric intake. All the patients except one were placed on two-hourly feedings of "amigen" and dextri-maltose. "Amigen" is an enzymatic hydrolysate of casein and pork pancreas containing all the essential amino acids and polypeptids. It contains 12 per cent total nitrogen, 65% of which is amino nitrogen and the balance polypeptid nitrogen, imino nitrogen, ring nitrogen, and ammonia nitrogen. One patient took an experimental protein hydrolysate with a nitrogen content of 13.5%.

The mixture fed contained from 0.5 to 0.8 gm. of nitrogen and 40 to 50 calories per kilogram of body weight per twenty-four hours. For a 60 kilo man the amount of "amigen" taken in twenty-four hours was from 300 to 400 gm., with a nitrogen content one and one half to three times that of a high protein diet. Each gram of "amigen" yields 3.7 calories, and each gram of dextri-maltose adds 4 calories. The mixture was made up by adding three parts by weight of water to one part of "amigen." The mixture was divided into eight or nine feedings to be given every two hours during the waking period. In cases in which the ulcer distress was severe the feedings were given hourly.

The amigen preparation is offensive to some patients but not to others. It seems to us that peptic ulcer patients as a class have the least objection to its taste. There is no one method of administration acceptable to all patients. Some prefer it cold, others at room temperature and still others, hot. Many prefer it without flavor. Some patients prefer to take the concentrated amigen mixture first and then follow it with the dextri-maltose solution as a "chaser." In case of extreme intolerance, a small Levin tube may be used which the patient can either swallow in the morning and keep until the last feeding is given during the twenty-four hour period, withdrawing it before retiring; or, after some training, he can swallow the tube before each feeding, withdrawing it thereafter, repeating this every two hours. Mention may also be made of the fact that this mixture is a good medium for bacterial growth and for that reason

must be kept in the icebox once it is made up. The ingestion of the bacteria-laden mixture may provoke vomiting and diarrhea.

The mixture was given exclusively for from two to three weeks, depending upon the subsequent X-ray findings. If after two weeks the X-ray examination indicated healing of the ulcer the patient was given a bland diet supplemented by two-hourly feedings of amigen.

The mineral intake. The chloride content of "amigen" (4) was approximately equal to 1.7—2% sodium chloride, so that with the higher doses of amigen the daily ingestion of sodium chloride was at most 6.8 grams daily. In addition to sodium chloride, the approximate composition of amigen ash, which comprises 5.5% of the bulk, is as follows:

	per cent
Phosphorus.....	0.9
Sulfur.....	0.6
Potassium.....	0.3
Calcium.....	0.4
Magnesium.....	0.05
Iron.....	0.02
Copper.....	0.002

The intake, therefore, of minerals contained in from 300 to 400 grams of amigen approximated the daily requirements as given by Macy (5) and by Heath (6).

Supplementary measures. During the period of amigen feeding, the following complement of vitamins was given daily; namely, thiamine chloride, 50 mgm.; ascorbic acid 100 mgm.; riboflavin and niacin, each 50 mgm. Liver extract, 15 USP units, was given intramuscularly twice a week. No antacids or antispasmodics have been found necessary. Whenever there was a tendency to diarrhea, "amphojel" was given in 4 cc. doses, twice a day, a dose too small and too occasional to affect the course of the treatment by its antacid property. None of the patients were required to abstain completely from smoking.

ANALYSIS OF RESULTS

Symptoms. The twenty-seven cases in which pain or epigastric distress was the presenting symptom, the pain and distress stopped in twenty-four hours, in fourteen, and in forty-eight hours in thirteen. Seven of those in the former group and three in the latter group were "intractable" cases. Of the thirteen cases in which vomiting was a symptom, it stopped immediately after the institution of the diet in six, in twenty-four hours; and in one (treated at home), in forty-eight hours. Of the fifteen cases with occult blood, this disappeared in two days in two; in three days in six; and in one week in six.

Gastric acidity. Since the treatment seemed so efficacious without the use of antacids, the factor of gastric acidity has not received systematic study in this series. However, of the eighteen cases in which gastric analysis was performed, eight showed mild and six severe hyperacidity, while four showed normal acidity. Table 1 shows the effect of feeding amigen and dextri-maltose mixtures in (a) a patient the pH and free acidity of whose gastric contents was relatively low; and who was fed a mixture containing 50 grams of amigen and 58.6 grams of dextri-maltose, the pH of the mixture being 5.39; (b) a patient in whose gastric contents the pH was low and the

free acid fairly high but who was fed every hour, practically half of the average dose (25 grams amigen and 37 grams dextri-maltose, pH 5.35); (c) a patient whose gastric pH was also low, whose free acid was higher but who was fed a mixture containing 51.1 grams amigen and 58.6 grams dextri-maltose with a pH of 5.22. It will be seen from (a) that the pH rose slightly after the feeding and the free acid disappeared for two hours and twenty minutes. In (b) the pH was raised from an initial value of 1.75 to 4.40 after the first feeding, while the free acid had disappeared. The pH declined gradually but was again raised slightly by the second feeding, after which it began to decline again until at the end of the second hour, it was lower than at the end of the first hour. The free acid at the end of the second hour had also returned to a figure above the initial values. A third feeding raised the pH again but did not neutralize the free acid. At the end of the third hour the pH was lower than at the end of the second hour, and the free acid was the highest it had ever been. Whether this gradually weakening effect is characteristic of small feedings or due to other factors is at present not clear. In (c), with an initial pH of 1.92 and a free acid of 59, the feeding of 51.1 grams of amigen and 58.6 grams of dextri-maltose caused the pH to be raised to 4.21, and the free acid to disappear for about two hours, after which the pH began to fall and the free acid to rise.

While these studies have not been systematic, they suggest that two-hourly feedings or larger quantities are more efficacious than one-hourly feedings of small quantities. It is quite possible that with further study, a feeding formula may be evolved which would relate the frequency and dose of feedings to the initial pH and free acidity of the gastric contents. One additional small point may be made here, that of the two samples of gastric juice taken a few minutes apart after the Levin tube was introduced; the first sample had a higher pH and a lower free acid value than the second sample, suggesting the presence of the tube provoked secretion.

TABLE 1

TIME	pH	FREE ACID	TOTAL ACID
A			
10:00	4.25	1.0	56.0
10:10	5.38	14.5	64.0
Feeding: Amigen: 50 g. Dextri-Maltose: 58.6 g.—10:10			
10:45	4.45		192.0
11:06	4.72		218.0
11:15	4.76		224.0
11:30	4.68		259.5
11:45	4.50		267.0
12:00	4.50		232.0
12:15	4.00		175.0
11:30	3.89		170.0
Formula:	5.39		489.0
B			
10:30	1.90	26.5	48.0
10:35	1.75	42.0	66.5

TABLE 1.—Continued.
1st Feeding: Amigen 25 g. Dextri-Maltose 37 g.—10:35

TIME	pH	FREE ACID	TOTAL ACID
10:40	4.40	0	211.0
10:50	4.01	0	289.0
11:30	3.39	0	243.0

2nd Feeding: Amigen 25 g. Dextri-Maltose 37 g.—11:30

12:00	3.65	0	209.0
12:10	3.64	0	259.0
12:30	2.59	74.0	180.0

3rd Feeding: Amigen 25 g. Dextri-Maltose 37 g.—12:30

12:40	3.83	53.0	190.0
1:20	3.71	12.0	177.0
1:30	2.35	88.0	180.0
Formula:	5.35		502.0
C			
10:00	2.05	47.0	65.5
10:10	1.92	59.0	78.5

Feeding: Amigen: 51.1 g. Dextri-Maltose: 58.6 g.—10:10

10:45	4.21		205.5
11:00	4.24		269.5
11:15	4.15		245.5
11:30	4.07		305.0
11:45	4.22		298.0
12:00	4.18		286.5
12:15	3.68	3.0	212.5
12:30	3.01	34.5	191.5
Formula:	5.22		456.0

pH, free and total acid values of gastric contents in three cases of peptic ulcer before and after feeding with amigen and dextri-maltose. The high total acid values are due to the presence of amino acid.

The above pH and free acid figures are in good agreement with those of Levy and Siler (7), who first demonstrated the practical effect of amigen feedings on the pH and free acid values of the gastric contents of normal persons.

The nitrogen balance. Of the twenty-nine cases, the nitrogen balance was followed for from thirteen to eighteen days in twenty-one. Their "nitrogen hunger" was exemplified by the large amounts of nitrogen stored. In these cases the nitrogen retention averaged between 9.84 and 16.61 grams daily, most values ranging around 12 grams. This represents a daily protein gain to the body of from 61.5 to 103.8 grams. There seems thus to be a protein deficiency in a large number of peptic ulcer patients, a finding which is consonant with evidences of other nutritive deficiencies found by Riggs, Reinhold, Boles and Shore (8).

The body weight. The nitrogen storage in these patients is reflected in the steady gain in body weight. In only one patient was there no gain registered and this patient was already in good nutrition on admission. In all the others the gain

varied from 1.8 kilograms in eighteen days to 14.3 kilograms in forty-six days. However, it must be mentioned that patient R. B. developed temporary edema after four weeks of "amigen" feeding. Whether latent edema was present in the other patients, it is not possible to state, although the discontinuation of exclusive "amigen" resulted in a loss of from 1 to 3 lbs. in some of the patients on the first two to three days, after which the weight remained steady.

Bedside ergography. Sixteen of these patients had their endurance tested periodically with the bedside ergograph described in a previous report (2). Briefly, this apparatus records on a moving drum the excursions made by the upper extremity in lifting a constant weight every three seconds. The time of performance in seconds is called the ergograph time (E.T.). While this method seems crude, it has served in our convalescence studies as a better index of clinical improvement or retrogression than any other clinical criteria now in use. It was found in the ulcer cases that all these so studied improved markedly in their performance, the E. T. increasing from 75 to 400% in the course of the treatment (fig. 1).

The hematocrit reading, plasma proteins and fasting amino acid levels. Most of the initial hematocrit and plasma protein values were slightly below normal in spite of some hemoconcentration, evidenced by the drop to lower values on subsequent days when better hydration had been achieved. These subnormal values are in accord with the findings of Riggs, et. al., referred to above. It seems also that the hematocrit and plasma protein values dropped further as treatment continued. This may be due to overhydration. All these values are relative, and unless the alteration in the plasma and extracellular fluid volume are determined quantitatively,

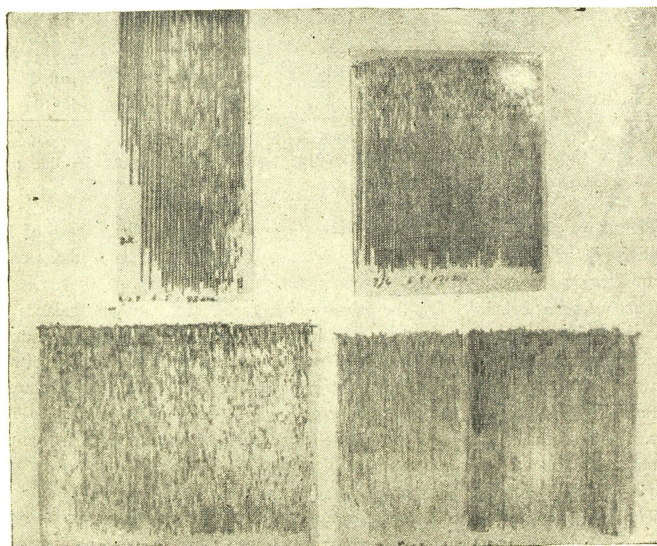
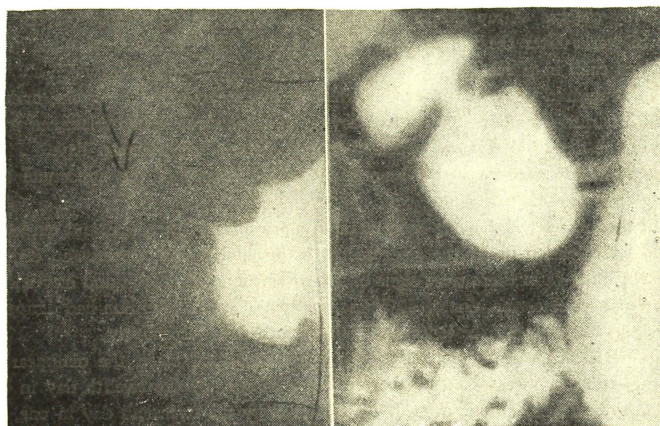


FIG. 1.—Ergogram of Patient D. R. Showing Different Periods after Treatment

these values lose much of their significance. The fasting plasma alpha-amino acid levels, as far as they have been determined, are interesting. In six cases, two were below the lower limit of normal, as established by Hamilton and Van Slyke (3), and

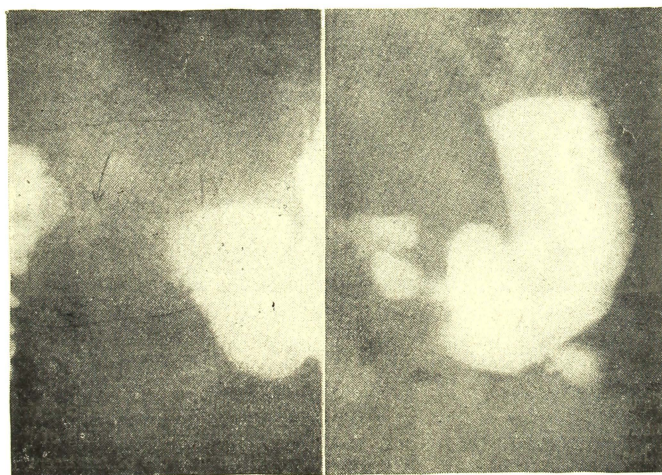


A

B

FIG. 2 A.—Patient S. V. Ulcer and Clover-like Deformity of Duodenum

FIG. 2 B.—Patient S. V. Picture After 23 Days of Treatment



A

C

FIG. 3 A.—Patient F. G. Marked deformity duodenum with clover leaf formation and ulcer defect mid-portion of duodenal cap.

FIG. 3 C.—Patient F. G. 6 Weeks of Treatment, Showing Marked Improvement

three were within normal limits. As the treatment progressed, the fasting alpha-amino acid levels first rose, falling again slightly during the later course of treatment. This drop may again be related to a tendency to retain fluids found in some of these cases as the treatment progressed.

X-ray checks. X-ray checks were made in twenty-one cases in from ten days to three weeks after the initiation of the treatment. In the duodenal ulcer group, in the ten cases in which this check-up was made, there were two in which an ulcer crater disappeared in ten days, one in which it disappeared in two weeks, and one in which it disappeared in twenty-five days. In other cases signs of lessened irritability of the duodenal segment appeared in ten, fifteen and nineteen days. Figure 3 shows the improvement in the roentgenologic appearance of the duodenum after twenty-three days of treatment.

In those cases not showing such marked improvement, the spasm and tenderness elicited by palpation under the fluoroscope disappeared in ten, eleven and eighteen days. In other cases there were signs of improvement in eight, ten and eleven days. In two cases of retention, one of 60% and one of 90%, this retention had disappeared roentgenologically by the tenth and the fifteenth days respectively.

In the eleven cases of combined gastric and duodenal ulcer, the disappearance of the gastric ulcer was noted by the tenth day in one, by the twelfth day in two, by the thirtieth day in one in two weeks in two, by the twentieth day in one, and in one month in one. Marked reduction in the size of the ulcer was found in ten, fourteen, and fifteen days, and one was smaller by the fifteenth day.

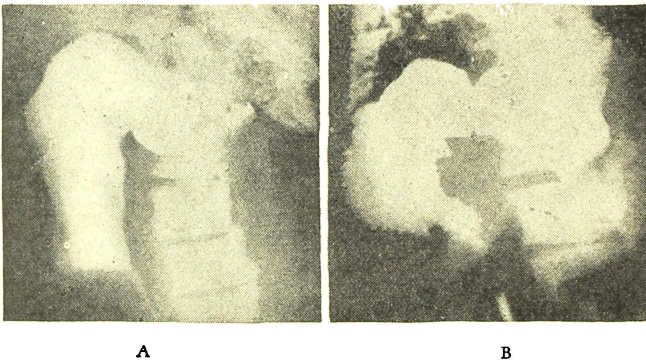


FIG. 4 A.—Patient C. B. Large Crater, Lesser Curvature
FIG. 4 B.—Patient C. B. Almost Complete Healing in 10 Days

Figures 2 to 6 show healing of gastric or duodenal ulcers of various sizes as demonstrated roentgenologically. While such rapid roentgenologic healing of gastric ulcers has been reported by various authors using different types of treatment, (see Brown [9], Palmer [10] and Golden [11]), it was more the exception than the rule, while with the hydrolysate regimen, prompt healing seems to be more the rule than the exception. Figure 6 shows the relief of marked retention after three days of treatment.

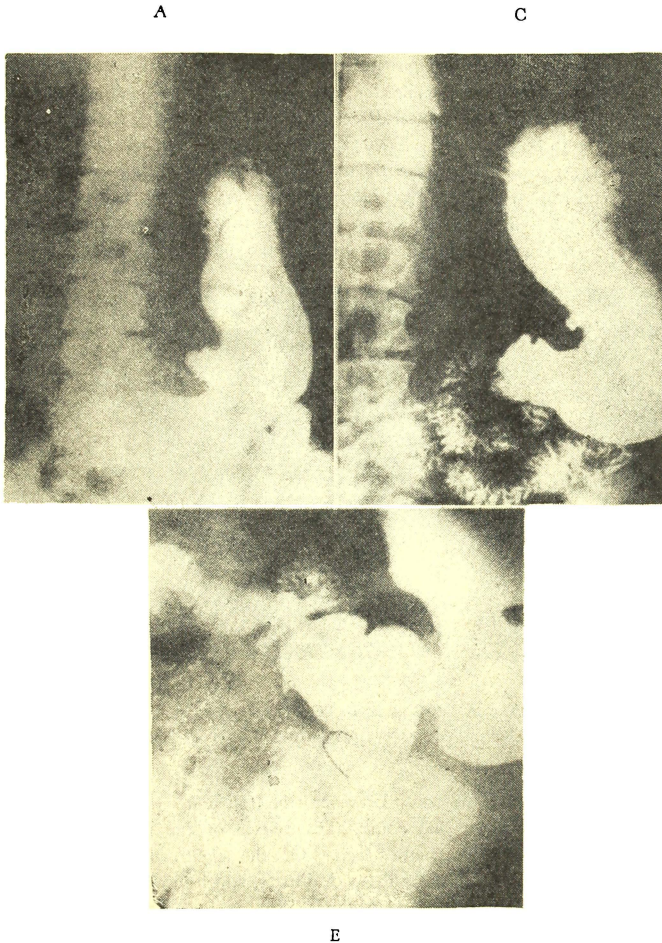
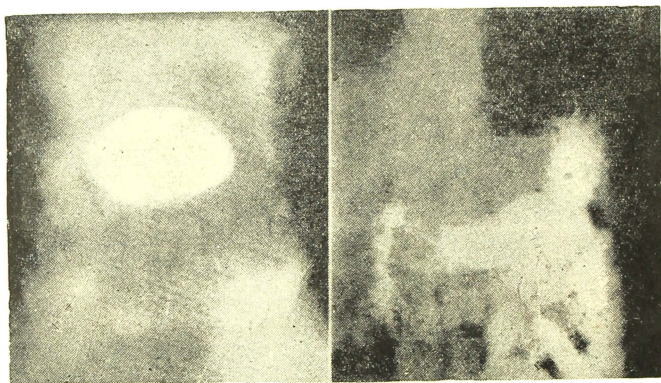


FIG. 5 A.—Patient R. B. Large Ulcer Crater, Lesser Curvature Pars Media
FIG. 5 C.—Patient R. B. Gradual Filling up of Defect, 4 Weeks of Treatment
FIG. 5 E.—Patient R. B. Gradual Filling up of Defect, 7½ Weeks of Treatment

The X-ray checks of the two cases with suspected gastrojejunal ulcer merit further comment. Both patients were admitted with pain and vomiting and with marked loss of weight. The roentgenograms showed marked tenderness over the stoma, and dilation of the stomach and proximal jejunum. Patient J. S., who also showed a gastrojejunal ulcer, had a 50% retention. There seemed to be a poorly functioning proximal loop in both. After treatment there was in both cases prompt disappearance of the pain and vomiting and a marked clinical improvement with

rapid gain in weight and strength. X-ray checks showed disappearance of pain and tenderness over the stoma in about three weeks. In J. S., however, in spite of these signs of quiescence and clinical improvement, the proximal jejunal loop still remained dilated. This suggested that while the nutritional status and pathological status improved, the underlying mechanical defect in the anastomosis still remained, a situation which was to be expected.

Follow-up studies: Since the treatment is being reported as a measure for promptly rendering inactive a bad ulcer but not as one for producing a permanent cure, the follow-up studies do not constitute an essential part of this report. The treatment is still in its infancy, the oldest case having been dis-



A B
FIG. 6 A.—Patient E. B. "Complete" Obstruction

FIG. 6 B.—Patient E. B. Disappearance of obstruction after 24 hours of treatment. Ulcer defect in duodenum.

charged only eleven months ago. However, the follow-up results now available are informative on at least one point. Twenty-two of the twenty-nine patients were discharged over three months ago. Of the eight who were discharged without dietetic instruction six returned with distress, which in all cases was promptly controlled by two-hourly hydrolysate feedings. However, one person in this group preferred gastrectomy to following a regulated regimen, which included avoidance of alcohol.

From the ten persons instructed to adhere to a "bland diet", no report has been received. The remaining four were instructed not only to follow a bland diet but also to take two-hourly feedings of "amigen" or milk and to avoid excessive smoking. All of these reported that they were in greatly improved health three to six months after discharge.

These follow-up results, scanty as they are, suggest that this treatment is no more efficient than other treatments in insuring against a recurrence of symptoms when the patient returns to old habits associated with the persistence of ulcers, such as irregular feedings, the eating of rough food, or indulgence in

tobacco or alcohol. The prompt control of recurrent symptoms by feeding with the mixture suggests that this treatment may prove to be a satisfactory ambulatory treatment even in cases of severe ulcer. This possibility is now being put to a test in the out patient clinic.

DISCUSSION

The question arises how this prompt improvement with "amigen" is brought about. It is possible that the antacid property of the amino acids, previously demonstrated by Levy and Siler, was a factor. In fact, these authors, on the basis of their studies, recommended amino acid mixtures as a treatment for peptic ulcers. A second and perhaps equally important factor is that in addition to its being a natural antacid, the protein hydrolysates are a rich source of nutriment. It is well known that in most strict methods of treatment of peptic ulcer the food intake, especially of nitrogen, is usually insufficient, and the patient is left with reduced strength and weight. Considering the pre-existing circulatory deficiencies as demonstrated by Riggs, et al. and confirmed in part by us in this work, and the protein deficiency demonstrated here, it is conceivable that in the presence of this nutritional deficiency, too few "building blocks" are available for the process of replacing the tissue defect in the ulcer, no matter how adequate the antacid therapy may be. With the new form of treatment, both the antacid factor and the nutritional factor are furnished by the same therapeutic agent and hence, the improvement and rehabilitation of the patient and the healing of the ulcer should go hand in hand at a faster pace.

Two additional points may here be stressed. First, the fact that "amigen" is well tolerated by stomachs showing partial to complete obstruction suggests that it imposes less of a digestive task on the diseased gastrointestinal tract than natural food. This has been the impression gathered from its use in cases of other types of gastrointestinal disease. This is to be expected since the tract is spared the necessity of taking ingested foodstuffs apart to enable absorption to take place. The prompt relief of pyloric obstruction which we have noted should not of course be expected in all cases of organic obstruction. In our cases the treatment probably overcame spasm and edema of the pylorus.

The results obtained in these cases are so promising that it would seem worthwhile for gastroenterologists to try this treatment and compare the results of those obtained with other types.

SUMMARY AND CONCLUSIONS

1. A hyperalimentation treatment with a high caloric and high amino acid (protein hydrolysate) mixture has been found to be efficacious in promptly bringing acute peptic ulcers to a state of quiescence.
2. It is also a prompt method of simultaneously rehabilitating the strength and body weight of the ulcer patient.
3. The prompt improvement appears to be due to the giving of a substance

(protein hydrolysate) that is simultaneously an antacid and an easily assimilable food which can be built into tissues.

4. The treatment does not insure against recurrences when the patient reverts to old dietary habits.

5. In the course of this work, a protein deficiency has been demonstrated in a large percentage of peptic ulcer cases.

6. The suggestion is made that gastroenterologists try this treatment and compare the results with those obtained with other regimens now in use.

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ADDENDUM*

THE HYPERALIMENTATION TREATMENT OF PEPTIC ULCER WITH AMINO ACIDS (PROTEIN HYDROLYSATE) AND DEXTRI-MALTOSE

Since publication of the above work, there have been an additional series of 176 cases, all treated ambulatorily. The pertinent data on these cases are summarized in Tables 1, 2 and 3.

The treatment may be divided into two parts—(a) Intensive period of exclusive hydrolysate and dextri-maltose feeding, (b) A less intensive period during which 3 bland meals replace 3 hydrolysate feedings.

The more precise method of calculating the caloric and hydrolysate intake required during the intensive period is to use the following formulas:

$$\text{Body weight (kg)} \times 50 = W = \text{No. of calories required per day.}$$

$$\text{Body weight (kg)} \times .6 = X = \text{Grams of nitrogen required per day.}$$

* Dextri-maltose is used in preference to glucose for the theoretical reason that the former being a simpler sugar, would presumably be absorbed so rapidly that some may be spilled in the urine. Dextri-maltose #2 contains no sodium chloride, which would otherwise be given in an over dosage, there being already some 2-4% in the hydrolysate.

$$\frac{x}{\% \text{ of N in hydrolysate}} \times 100 = Y = \text{No. of grams of hydrolysate required per day.}$$

$$\frac{W-4Y}{4} = Z = \text{No. of grams of dextri-maltose required to supply the balance of calories.}$$

For the ambulatory patient the following approximation may be made: take 5 grams of protein hydrolysate and 6 grams of dextri-maltose #2¹, per kilograms body weight. This formula, however, must not be applied to hydrolysates with a nitrogen content which exceeds or falls much below 12%. Since most hydrolysates in the market, as well as dextri-maltose contain 8 grams of material to the level tablespoons, it is usually more convenient to instruct the patient how many tablespoons of each material may be taken, instead of how many grams. The two powders are suspended in about a quart and a half of hot water, and the mixture is divided into 8 to 9 2-hourly feedings taken during the waking hours and continued until the patient is pain-free for 2 weeks. Some patients prefer to take the two separately, taking the protein hydrolysate solution first to be followed by the dextri-maltose as a "chaser." The hydrolysate solution is better tolerated when chilled. If the amounts given every two hours is too large to be tolerated, it may be divided into hourly feedings. If night pains occur, a feeding should be given. (This feeding should not be taken out of the daily mixture, but should be made up as a separate dose.) If pains occur before the end of the two-hourly interfeeding period, the total amount of the feeding may be divided into 9 or 10 1-1/2-hourly feedings.

A full complement of vitamins may be given daily after the first week. Water may be given ad libitum. No antacids or antispasmodics have so far been necessary. Kaomagma or Kaopectate (4cc), one or more times a day is given only to control diarrhea. Milk of magnesia may be given for constipation.

(b) Following this intensive treatment, i. e., after the patient has been pain-free for 2 weeks, the second part of the regimen may start. The patient is given a bland meal 3 times a day, so timed that they take the place of 3 hydrolysate feedings and so that he now takes only 5 hydrolysate feedings and 3 meals, maintaining the 2-hourly feeding schedule.

This period may be ushered in by giving the patient an experimental breakfast the first day, the subsequent 2-hourly feedings to be still of hydrolysates. If at supper time, the breakfast has caused no distress, then a bland supper may be given. According to this plan, therefore during the first day of the second period the patient takes 2 bland meals and 6 hydrolysate feedings.

If food still provokes distress, the patient reverts to exclusive hydrolysate feedings for another week. If no distress is caused, the patient takes 3 bland meals a day, beginning the second day of this intensive period.

At this stage, the hydrolysate may be given without dextri-maltose, unless it is desirable to add to the patient's weight. The patient on this new regimen is con-

¹ Grateful acknowledgment is made of the companies mentioned in Table 3 for the supply of protein hydrolysates used in the treatment of this series.

tinued for 2 months, after which 2-3 tablespoons of dried milk powder may be substituted for the hydrolysates. The 2-hourly feedings must be continued for at least 6 months.

Articles of bland diet which we have used are eggs, chicken, fish lamb, beef, provided these are not fried, with milk and toast and mashed potatoes. Fruit juices and pured vegetables are added to the diet during the second month, one unknown at a time, to be discontinued if they cause distress.

During the intensive part of the treatment, good response is shown by prompt subsidence of pain and usually by gain in weight of 1 to 3 pounds in 2 to 3 days. (Table 2)

Most "intractable" cases do not need to give up work but occasionally some need home rest.

The patient must be warned that the feedings *do not taste good*.

No tobacco smoking is allowed for at least 6 months, thereafter tobacco is allowed only after meals.

For mild cases: i.e., cases without daily attacks of pain or distress.

The intensive part of the above regimen is omitted and the patient is started on 3 bland meals a day and 5 hydrolysate feedings without dextri-maltose similar to the second part of the above regimen.

It will be seen from Table II, that there is an incidence of 9% failure, i.e., 91% of these patients who have been screened by other methods of medical therapy from Sippy, amphogel to Larostidine (18 cases) responded favorably to the treatment. The response of most of the cases was spectacular but in a few, relief was obtained less promptly. To these failures must be added 24 who for reasons of taste could not tolerate the feedings. Whether this number could have been reduced by feeding the hydrolysate and the dextri-maltose separately is at present not clear. However, it may be mentioned that the last 9 cases who first showed intolerance, were able to continue the treatment when the two substances were taken separately.

Table 3 summarizes the 8 preparations of hydrolysates used in this second series. With only 5 of these was the series large enough to be of any significance.

It will be seen from Table 3 that in a total of 207 cases (176 of the present series, plus 31 of the original) 120 were treated with Squibb material, 41 with amigen, 8 with protolysate, and 14 with each of edamin and aminonat. It must be mentioned that for some still unexplained reason, patients who are not able to tolerate one hydrolysate may be able to tolerate another. Therefore, a doctor must learn how to use more than one type of preparation.

TABLE 1.—Data on 174 Cases of Peptic Ulcers Treated Ambulatorily
With Protein Hydrolysates

Sex		Ages	
	166 M. 8 F.		11-58
Types			
	154 Duodenal	Severe	156
	16 Gastric	Mild	18
	4 combined		

HISTORY

Duration 5 to 17 years		Melena	10
Night pain	58	Hematemesis	2
Malnutrition	102	Perforation	8

TABLE 2.—Response to Treatment

RELIEF OF PAIN		GAIN IN WEIGHT (5-24 lbs-3 wks)	
		No gain	24
With first feeding	48		
24-48 hours	92		
48 hrs. to 1 week	20		
Night pains (1st 3 days)	35		
Night pains (1st 5 days)	23		
Failures	16		

TABLE 3.—Hydrolysates Used In This Series

COMPANY	NAME OF PRODUCT	NO. OF CASES
Elli Lilly	Liver-protein mineral mixture	2
Frederick Stearns and Company	Essenaminate	3
Gelatin Company of America		3
Mead Johnson & Company	Amigen Protolysate	11 6
National Drug Company	Aminonat	14
Sheffield Farms Co., Inc.	Edamin	14
E. R. Squibb & Sons	Casein Hydrolysate	119
Vico	Yeastamin	4

DISTURBANCES OF THE ASSOCIATED OR CONJUGATE MOVEMENTS OF THE EYE¹

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Disturbances of the associated movements of the eyeball have been extensively studied. What little is known about them is not fully appreciated and utilized by many ophthalmologists, internists, and neurologists. Probably many have met them in practice, but few have had the opportunity to study them for long stretches of time or up to the autopsy.

Associated movements of the eyeball mean the simultaneous movements of the two eyes upwards, downwards, sideways (right and left), inwards (convergence) and outwards (divergence). That there are separate nuclei for each of the ocular muscles is definitely accepted. So is the nucleus of convergence (Perlia's). A divergence nucleus is, however, not well established, although the existence of a divergence impulse is generally recognized. The existence of supranuclear apparatus has universal acceptance. The occipital and temporo-parietal lobes have higher motor centers for the eyes, and they have mainly a reflex function. The voluntary oculomotor center is in the frontal lobe; and, according to Duane, it contains the chief center for conjugate and other associated movements. It is also known that between these higher cerebral association centers and the individual nuclei for the ocular muscles, there exists a coordinating apparatus similar to a player piano with the ocular muscle nuclei corresponding to the keyboard. This is located just above the oculomotor, trochlear and abducens nuclei at the floor of the third and fourth ventricles, but not identical to the posterior longitudinal bundle. Autopsy has never revealed a precise anatomical lesion. In case of neoplasm, involvement is always seen in the region of the quadrigeminate bodies; but the localization is always indefinite and the paralysis of convergence is sooner or later associated with other paralysis. This is demonstrated in some of the cases included in this report.

Case 1. A case of Parinaud's syndrome (Paralysis of convergence, upward and downward gaze). Male, 25 years old, came for inability to move the eyes up and down and for a slight difficulty in reading and walking up and down stairs. About 11 years before, he had an illness lasting a few months with characteristics of an acute infection, probably of encephalitic nature. About three months before he was seen he had a drinking bout, being a heavy drinker but not a habitual one. He became unconscious for several days. When he came to, he could not look sideways. Nor could he converge his eyes. The pupils were dilated with slight and retarded direct and consensual light reaction. Pupillary reaction to accommodation was sluggish. Accommodation was weak, slow, and retarded—almost paretic at the

¹ Read before the 39th Annual Meeting of the Philippine Medical Association, held May 9, 1946.

right. Vision was practically normal for distance. Fundi normal. No scotoma. Visual fields normal. There was slightly grade 3 fusion. Prism test for muscle paralysis showed movements in the lateral directions but none for up and down. Bell's phenomenon was positive.

The aural findings were: Hearing was practically normal. In the vestibular tests, douching and turning elicited practically normal response from the horizontal canals but no nystagmus was observed when the vertical canals were stimulated, although there were past-pointing, falling, and vertigo. Wassermann test of the blood and other laboratory examinations were negative.

Comment: The lesion in this case seems to have been the supranuclear apparatus around the superior quadrigeminate bodies involving the posterior longitudinal bundle but not all the fibers leading to it. Those coming from the horizontal canals have escaped, while those from the vertical canals have been caught. The fibers from the cortex were intact, so that they produced vertigo. Those from the cerebellum were unaffected, because there were past-pointing and falling. The median nucleus or convergence must also have been involved. The nearest etiological consideration was encephalitis of virus or alcoholic nature. Multiple sclerosis could not be entirely ruled out. I observed this patient for several months. Then I lost tract of him.

Case 2.—Paralysis of upward gaze with paresis of downward gaze (incomplete Parinaud's syndrome). Male, 28 years old, first seen for impairment of vision with slight papilledema which was interpreted as optic neuritis. Dental extraction for focal infection was advised. Headache then appeared with definite choking of the disc but with meagre localizing symptoms except paralysis of upward gaze. After craniotomy, paresis of downward gaze was observed. The patient was taken home against advice, and he died after a few days. No autopsy could be done.

Comment.—There was in all likelihood a tumor in the region of the supranuclear apparatus around the third and fourth ventricles. An incomplete Parinaud's syndrome was a clear localizing finding.

Case 3. Conjugate deviation to the right due to encephalitis. Female child, 8 years old, with definite history and findings of encephalitis. She had these ocular manifestations: She seemed to be always looking to the right. There was no definite squinting. She could move the eyes to the right normally. When directed to look to the left she could move the eyes as far as the median line but not any further. There was slight convergence movement, especially of the right eye. The upward and downward movements were normal. The pupils were normal. There was slight haziness of the nasal border of the right disc and slight venous congestion of the two sides.

This child was not observed long enough; but it seemed that encephalitis, where the lesion is usually at the basal ganglia, had caused a unilateral longitudinal bundle rather than mere involvement of the right abducens nucleus or right cortical centers.

Case 4. Paralysis of lateral conjugate movements and convergence. Male, 24 years old, came for attacks of twitching of the left lower lid, later involving the left side of the face, accompanied by dizziness and vomiting. When first seen, the right eye could move only up and down but not sideways. The left could move in all directions but not inwards. No diplopia could be elicited. Convergence slightly

impaired. After three weeks, there was complete immobility of both eyes except upwards and downwards; and convergence was completely lost. Two weeks later, before he died, there was a slight impairment of up and down movements with nystagmoid movements in the vertical direction. With only slight disturbance of hearing, there was lack of response to caloric on both sides. Vision and fundus were practically normal. Except for a paralysis of the right side of the face, there were no other important neurological findings. Autopsy by Dr. Galang showed a hard tumor mass 3 cm. in diameter in the region of the fourth ventricle above and attached to the velum and in between the medulla and the cerebellum, with moderate hydrocephalus. Histologically it was a ganglioneuroma.

Comment.—The steps in the development of the lateral associated paralysis with that of convergence were observed. Disturbance of the vertical movements were already starting when the patient died. The tumor must have compressed the vestibular fibers to the ocular nuclei, to the cerebellum, and to the cerebrum; but not the cochlear nerve bundles.

Case 5. Divergence paralysis secondary to pineoblastoma. Male, 12 years old, was seen complaining of headache, dizziness, and internal squinting for two months. The hearing was also impaired, especially that of the right. Tests showed mixed deafness. The internal squinting was periodic. Diplopia was present in all portions of the visual field for far and near, except in the center for near where — it was absent especially during convergence. The vision was slightly subnormal, at first compatible with bilateral papilledema. Later consecutive or secondary optic atrophy developed. X-Ray of the skull showed separation of the coronal suture, indicative of increase intracranial pressure, blurring of the sella tursica, and slight calcification of the pineal gland. Ventriculography, which was suggested by the neurologist and the neurosurgeon, was not done before he left the hospital. He returned after six months in a comatous condition and died after a few days. Autopsy by Dr. Monserrat showed tumor about the size of a "Chico" in the tela choroidea infiltrating the walls of the third ventricle, extending to the lateral ventricle and with the involvement of the medullary tracts of the cerebellum and cerebral hemisphere, more on the left; softening of the corpora quadrigemina by pressure; internal hydrocephalus; protrusion of the cerebellum through foramen magnum; and atrophy of the optic nerves. Histologically it was found to be pinealoma.

Comment.—The findings were similar to those in a report by Robbins on a Case of divergence paralysis. He said, "The presence of a divergence center is questioned by some writers. Nevertheless, in the light of our present knowledge, it seems the most tenable-explanation of the syndrome." The defect of hearing was probably one of "Central deafness" from local and general pressure of the tumor.

Case 6.—Convergence and divergence paralysis with paresis of upward movement. —Male, 19 years old, was first seen for diplopia in the right fields and slight internal squinting of the right eye. With chronic suppurative otitis media especially of the right, Grandenigo's syndrome was first considered. Persistent headache and ataxia with choking of the disk soon appeared. The slight internal squinting almost disappeared; but diplopia could be elicited in all regions of the visual field, especially when looking toward the median line. There was also a slight impairment of upward gaze. Blind spots were enlarged although the visual fields were

not definitely constricted. Hyperalgesia was marked all over the body. X-ray showed a calcified spot above and to the left of the sella turcica in the region of the pineal body. The patient died after ventriculography. Autopsy by Dr. Sapi-
noso showed tumor in the median line in the roof of the third ventricle with internal hydrocephalus and dilatation of the third and lateral ventricles. The tumor was attached to the thalamus. Histological examination by Dr. Sta. Cruz revealed pinea-
loma with calcification.

Comment.—The development of the diplopia would show that the disturbance started with weakness of one lateral rectus, developing into a divergence paralysis, and finally involving the convergence center. The upward conjugate movement was beginning to be impaired when the patient died. The diplopia has some simi-
larity to that of case 5, but here it was present even in the center for near because of simultaneous convergence paralysis.

SUMMARY AND CONCLUSION

Disturbances of divergence and convergence should be kept in mind in cases where diplopia is a complaint and can be elicited throughout the visual field, especially when no definite squinting is present.

In any case of disturbance of the associated or conjugate ocular movements, a brain tumor and encephalitis should be considered among other causes. When-
ever a brain tumor is suspected, the presence of paralysis of any associated or con-
jugate movement is a localizing finding.

EVALUATION OF DIETS SERVED TO WOMAN STUDENTS OF THE UNIVERSITY OF THE PHILIPPINES ¹

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INTRODUCTION

The University of the Philippines has two committees that look into the living conditions of the students; namely, the President's Committee on Dormitories and the University Council Committee on Students' Living Conditions. When one of the authors (P. I. J.) was appointed to head both committees, an intensive campaign was undertaken to investigate the sanitary conditions of the dormitories and boarding houses patronized by our students. Regular and frequent inspections of the dormitories were made and suggestions were given whenever any defect was noted. But the inspections had hardly started when complaints about food came thick and fast from the students, so that very soon an investigation of the foods served by each dormitory was undertaken.

METHOD OF INVESTIGATION

Foods composing one meal were collected without previous notice to the dormitory manager while they were being served to students. Foods of the other meals were taken in the same manner on other days, so that in each dormitory investigated three meals — namely, breakfast, lunch and supper — were collected at random. It must be mentioned in this connection that this study has been greatly facilitated by the full cooperation given by the dormitory owners. It is only to be regretted that our study was terminated by the outbreak of the war before we could complete the investigation of the dormitories for male students. The quantitative study of diets was done in accordance with the procedure for "Institution Survey" recommended by the Technical Commission on Nutrition of the Health Section of the League of Nations (1). The "weighing method" for diet survey was employed. It consists of taking food samples (breakfast, lunch, and supper) and evaluating the protein, fat, carbohydrate, vitamin A, thiamin, ascorbic acid, calcium, iron, and phosphorus contents by the item-by-item method. Proper allowances based on actual observations and weighing, were made for the food which was not actually consumed by the students. The tables compiled by the College of Agriculture (2), Daniel and Munsell (3), Fixsen and Roscoe (4), and Chatfield and Adams (5) were used in the computations.

NUTRITIVE VALUE OF THE MEALS SERVED

Analyzing the nutritive value of the diet served by private dormitories to female students of the University of the Philippines as shown in Table 1, we found that

¹ Read at the 39th Annual Meeting of the Philippine Medical Association, held May 10, 1946

the average caloric intake was 1713 per capita which is 34.1% below that recommended (2600 calories) by the National Research Council of the Philippines for moderately active adult females. Carbohydrates furnished 56.5% of the total calories; protein 22%, and fat 21.5%.

The protein daily intake averaged 94 grams, which is 34.3% above that recommended by the National Research Council of the Philippines (70 grams for females). Our finding for protein is, however, within the standard set up by Sherman (6) who suggested that proteins should supply about 14 per cent of the total calories. We found by calculation that plant foods furnished 46%, and animal foods 54% of the total protein.

The diets under investigation were all found to be deficient in vitamin A, thiamin, and vitamin C. The average vitamin A content of the daily diet ration was found to be 706 International Units, which is equivalent to only 17.6% of that suggested by the Section of Nutrition of the National Research Council which is 4000 International Units of vitamin A for female adults. The vitamin B₁ content was calculated as 223 International Units, which is only 46.5% of that recommended by the National Research Council of the Philippines for a moderately active female adult. The average vitamin C content of the daily dietary intake was observed to be 6.5 mg. or only 11.8% of that recommended by the National Research Council of the Philippines which is set at 55 mg. for the female adult.

The average calcium content was found to be 0.48 Gm. while the phosphorus content was 2 Gm. for the daily dietary intake. The figure for calcium is 68.6% of that suggested by the National Research Council of the Philippines. No interpretation and conclusion was deduced from the Ca: P ratio of 1:4.1, because phosphorus in cereals is only partially available and the diets analyzed have a high cereal content.

The average iron content was calculated to be 27.3 milligrams. This is more than twice that recommended by the National Research Council of the Philippines which is 12 mg. daily for female adults.

In general the typical constituents of the average diet served by the dormitories consisted of rice (or bread in the morning); meat; fish; small amounts of fruits and green leafy vegetables, and occasional servings of eggs, beef, sherbet, jams, jellies, and sweets. The commonest foods served included fish, meat, and bananas in limited amounts.

COMMENTS

When the dormitory owners were notified of the results of our dietary survey, they explained that the deficiency was due to the keen competition in the dormitory business which had forced them to charge very low rates. Although this claim was partly true, our study revealed that even with the present fees the foods could be further improved by better selection. In view of this finding, the Committee was able to make many suggestions for improving the diet without materially increasing the cost.

These suggestions included liberal servings of eggs; yellow fruits such as mango, papaya, pineapple, and banana; citrous fruits like calamansi; green legumes; green leafy vegetables; mungo and other beans; occasional servings of glandular organs; and reduction of such expensive items as sherbet, jams, jellies, and sweets in the menu.

Furthermore, attempts were made to educate the dormitory managers and owners on the fundamentals of nutrition.

SUMMARY AND CONCLUSIONS

A quantitative study of the diets served by private dormitories to female students of the University of the Philippines was undertaken in accordance with the procedure recommended for "Institution Survey" by the Technical Commission on Nutrition, Health Section of the League of Nations.

The average nutritive values of the daily diet were found to be as follows: calories, 1713; protein, 94 Gm.; fat, 41 Gm.; vitamin A, 706 I. U.; thiamin, 223 I. U.; ascorbic acid, 6.5 mg.; calcium, 0.48 Gm.; phosphorus, 2 Gm.; and iron, 27.3 mg.

From the analysis of the diets studied, it is apparent that the food served was highly deficient in caloric requirement, vitamin A, thiamin, ascorbic acid, and calcium. The diet consisted chiefly of rice, bread, meat, fish, small amounts of fruits (chiefly bananas), green leafy vegetables, and occasional servings of eggs, sherbet and sweets. Such a deficient diet may be improved by liberal servings of eggs; yellow colored fruits as mango, papaya, pineapple, bananas, etc.; citrus fruits as calamansi; green legumes; mungo; green leafy vegetables; and occasional servings of glandular organs, especially liver.

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TABLE 1.—Evaluation of diets served by private Dormitories to female students of the University of the Philippines.

DORMITORY	Proximate Composition (Gm.)			CALORIES	Vitamins			Minerals (Gm.)		
	Proteins	Fats	Carbohydrates		A (I.U.)	B ₁ (I.U.)	C(mg)	Ca	P	Fe
1. Catholic Women's League:										
Breakfast	18	11	79	487	438	121	0.7	0.075	0.447	0.0059
Lunch	28	16	80	558	64	138	0	0.149	0.927	0.0040
Supper	27	7	79	487	63	97	1.0	0.128	0.892	0.0104
TOTAL	73	34	238	1532	565	356	1.7	0.352	2.266	0.0203

TABLE 1.—Continued.

DORMITORY	Proximate Composition (Gm.)			Calo-ries	Vitamins			Mineral (Gm.)		
	Pro-teins	Fats	Carbo-hydrates		A (I.U.)	B ₁ (I.U.)	C (mg)	Ca	P	Fe
2. St. Theresita's:										
Breakfast	29	8	102	596	13	69	1.2	0.036	0.526	0.0451
Lunch	34	9	108	649	102	211	0.8	0.218	0.871	0.0150
Supper	24	7	75	449	422	40	0.8	0.068	0.650	0.0097
TOTAL	87	24	285	1694	547	320	2.8	0.322	2.047	0.0698
3. St. Mary's:										
Breakfast	14	17	31	333	190	83	0	0.022	0.153	0.0013
Lunch	31	8	65	456	500	8	4.0	0.090	0.573	0.0050
Supper	41	16	63	464	21	105	0	0.079	0.785	0.0060
TOTAL	96	41	159	1353	711	196	4.0	0.191	1.511	0.0123
4. Hugh Wilson:										
Breakfast	34	4	108	604	51	174	1.0	0.091	0.643	0.0093
Lunch	33	12	78	552	32	50	0.8	0.308	1.030	0.0076
Supper	27	7	98	563	9	63	0.2	0.145	0.751	0.0060
TOTAL	94	23	284	1719	92	287	2.0	0.544	2.424	0.0229
5. Avenue:										
Breakfast	28	9	69	469	452	37	0.8	0.421	0.460	0.0057
Lunch	28	8	78	920	392	92	0.8	0.113	0.680	0.0110
Supper	33	16	81	600	32	38	0.8	0.204	0.847	0.0087
TOTAL	89	33	228	1989	876	167	2.4	0.738	1.987	0.0254
6. Varsity:										
Breakfast	23	9	128	685	150	34	0	0.059	0.326	0.0016
Lunch	27	9	74	485	88	120	1.0	0.096	0.755	0.0098
Supper	16	5	68	381	347	25	0.8	0.054	0.657	0.0077
TOTAL	66	23	270	1551	585	179	1.8	0.209	1.738	0.0191
7. Y. M. C. A.:										
Breakfast	22	17	105	561	157	51	1.4	0.218	0.677	0.0104
Lunch	29	12	74	520	126	92	0	0.144	0.751	0.0057
Supper	33	10	63	482	65	82	0	0.062	0.768	0.0039
TOTAL	84	39	244	1563	348	225	1.4	0.424	2.196	0.0218
8. Cosmopolitan:										
Breakfast	26	16	97	636	290	35	59.5	0.111	1.000	0.0190
Lunch	33	14	75	558	296	82	0.8	0.147	0.615	0.0140
Supper	34	16	77	588	436	111	0	0.139	0.748	0.0143
TOTAL	93	46	249	1782	1422	228	60.3	0.397	2.363	0.0473
9. Doanes:										
Breakfast	13	14	90	498	477	49	0	0.074	0.513	0.0122
Lunch	40	31	106	763	310	18	0	0.499	0.422	0.0070
Supper	46	10	69	550	62	66	0	0.938	1.510	0.0108
TOTAL	99	55	255	1811	849	133	0	1.511	2.445	0.0300

TABLE 1.—Continued.

DORMITORY	Proximate Composition (Gm.)			Calo- ries	Vitamins			Mineral (Gm.)		
	Pro- teins	Fats	Carbo- hy- drates		A (I.U.)	B ₁ (I.U.)	C (mg)	Ca	P	Fe
10. Philippine Women's Col- lege Hall:										
Breakfast	22	17	70	521	588	19	1.0	0.050	0.555	0.0036
Lunch	50	23	148	999	8	101	4.0	0.109	0.348	0.0084
Supper	33	9	120	693	112	173	0	0.080	0.647	0.0108
TOTAL	105	49	338	2213	708	293	5.0	0.239	1.550	0.0228
11. University Women's Hall:										
Breakfast	22	13	50	386	325	90	0.6	0.034	0.214	0.0040
Lunch	37	41	126	921	212	69	0	0.315	0.815	0.0038
Supper	37	8	75	520	254	74	0	0.117	0.705	0.0084
TOTAL	96	62	251	1827	791	233	0.6	0.466	1.734	0.0162
12. Oregon Hall:										
Breakfast	8	3	31	218	911	39	1.0	0.046	0.122	0.0070
Lunch	43	33	84	805	21	26	0	0.465	0.834	0.0040
Supper	18	3	73	391	75	22	0.7	0.065	0.600	0.0090
TOTAL	69	44	188	1414	1007	87	1.7	0.576	1.556	0.0200
13. St. Joseph:										
Breakfast	21	18	88	598	568	62	0.5	0.041	0.517	0.0050
Lunch	125	33	13	849	105	57	2.0	0.156	1.060	0.0180
Supper	22	12	53	408	4	78	0	0.045	0.628	0.0038
TOTAL	168	63	154	1855	677	197	2.5	0.242	2.205	0.0268
TOTAL (Average)	94	41	242	1713	706	223	6.5	0.477	2.002	0.0273

TABLE 2.—Comparison of the nutritive values of the diet served by private dormitories to female students with the daily allowances for specific nutrients as recommended by the Section of Nutrition, National Research Council of the Philippines, for moderately active adult female.

NUTRIENTS	DIET SERVED	RECOMMENDED DAILY ALLOWANCE
Calories	1713	2600
Protein	94 Gm.	80 Gm.
Vitamin A	706 I. U.	4000 I. U.
Thiamin (B ₁)	223 I. U.	480 I. U.
Ascorbic acid (C)	6.5 mg.	60 mg.
Calcium	0.48 Gm.	0.7 Gm.
Iron	27.3 mg.	12 mg.

TREATMENT OF PNEUMONIA IN CHILDREN ¹

(A Report of 414 Cases in 1945)

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COMPARISON OF CASES IN 1944 AND 1945

In 1944 we admitted 113 pneumonia patients at the City Children's Hospital (now the Children's Department of the North General Hospital). At that time, we were fairly well-satisfied with the results of our treatment which gave a recovery rate of 38%. During that year, sulfapyridine was the drug most easily available to our patients.

By 1945 our pneumonia patients had increased more than three-fold as may be noted in Table 1. Indeed, during the latter months of 1945, pneumonia cases constituted about one half of our patients in the wards. Fortunately for the patients, more adequate and more effective drugs had been available since the liberation. Hence our fatality rate decreased from 17.7% in 1944 to 1.9% in 1945.

TABLE 1.—*Comparison of Results in the Treatment of Pneumonia*

	1944	1945
Number of cases — — — —	113	414
Treatments given were:	Sulfapyridine	Sulfadiazine
(any of them)	Sulfathiazole	Penicillin
	Symptomatic	Combined Penicillin and Sulfadiazine Symptomatic
Recovery Rate — — — —	38.0%	62.5%
Fatality Rate — — — —	17.7%	1.9%

The increase in the number of pneumonia patients in 1945 may be attributed to various factors. Since the liberation, the population of Manila increased, not only because of the return of evacuees, but also because of migration of people from the provinces to this city for jobs or for business purposes. This increase in population plus the destruction of thousands of homes in various districts of Manila made overcrowding unavoidable in districts that had escaped the ravages of war. Such overcrowding did not only result in lowering resistance but also favored the rapid spread of such contagious diseases as acute upper respiratory infections, measles, and pertussis. As will be noted in Table 2 in our group, these conditions are important in predisposing children to pneumonia. Reopening of schools brought children together again, while improvement in transportation facilities facilitated visiting; both factors plus excessive dust are favorable for the spread of respiratory diseases.

¹ Read at the 39th Annual Meeting of the Philippine Medical Association, May 10, 1946.

TABLE 2.—*Important Predisposing Diseases*

Acute Upper Respiratory Infections	187	Cases
Measles	89	"
Pertussis	15	"
Some Foci of Infection	13	"
Primary	110	"
<hr/>		
Total	414	Cases

It is well-known that our epidemics of measles and pertussis were alarming and prolonged in 1945, and hardly a non-immune child from any social strata escaped the disease. The marked increase in pneumonia cases in 1945 has given us materials for study, and this report includes 414 cases.

DIAGNOSIS

Our diagnosis of pneumonia in infants and children was based on the clinical history and physical findings. We confirmed the diagnosis by blood count and fluoroscopic examination. A throat smear of every patient was also taken on admission. As far as possible we tried to have the laboratory work and the fluoroscopic examination done before we instituted treatment; but, with serious patients, we could not follow this procedure. We promptly treated the patients. A urinalysis was done on admission and during the course of treatment, so as to watch any toxic effects on the kidneys.

Due to lack of films, we could not possibly do X-ray examinations for every case; but, for doubtful cases, we had an X-ray picture taken.

In this paper we have not attempted to make a detailed classification of pneumonia. For our clinical and therapeutic purposes, we were concerned with the severity and extent of the lesions rather than with the type.

PLAN OF TREATMENT

The majority of our patients (226) received sulfadiazine since we had a steady and adequate supply of this preparation. Whenever we had a regular supply of penicillin or when parents could afford it, we made use of this antibiotic (120 cases). For a handful of mild cases or for those who were already improving on admission, we simply gave supportive treatment and aspirin as antipyretic.

TABLE 3.—*Treatments given to 414 Pneumonia Patients (1945)*

Supportive Treatment	13
Sulfadiazine	226
Penicillin	120
Combined Sulfadiazine & Penicillin	55
<hr/>	
Total	414

Hydrotherapy was given to all febrile cases in the form of either tepid sponge baths or hot packs. The usual jacket compress was not used; neither did we make use of counter-irritants to the chest and back. As we had no oxygen supply, we were

deprived of this useful therapeutic remedy. Simple cough mixtures were given for distressing cough.

We did not starve our patients; rather, we went by their appetites. Fluids were encouraged by mouth, particularly when the patient was taking sulfonamides. Fluids were given parenterally when indicated. Eight patients were given blood transfusions when they apparently failed to respond to reasonable doses of either sulfadiazine or penicillin. Intravenous sodium sulfadiazine had to be resorted to only in two very serious cases. Our course of sulfadiazine consisted in giving the drug orally—starting with an initial dose of one grain per pound body weight (0.10 Gm. per kilo) followed by 1/6 of the first dose every 4 hours day and night. Administration of the drug was continued up to the time the patient was afebrile two days. We did not give sodium bicarbonate with it, but we encouraged fluids orally or gave them parenterally when indicated. We watched for toxic reactions.

Penicillin was given intramuscularly in doses of 10,000 to 20,000 units every 2 or 3 hours, depending on the age of the patient and severity of the disease. The intravenous route was resorted to only for serious patients. As with sulfadiazine, we continued administering penicillin until the patient was afebrile two days.

Cases which after a fair trial did not seem to respond to sulfadiazine, were switched to penicillin and *vice versa*. For very ill patients we tried to observe the effects of the two drugs together. We did not compare the results of combined therapy with those of either penicillin or sulfadiazine alone, because patients to whom we gave both drugs were in serious condition. Therefore, any comparison would not have been fair.

OBSERVATIONS

We made these observations on four hundred fourteen cases of pneumonia in children during the year 1945:

TABLE 4.—*Distribution by Month*

February	— 8 Cases
March	— 6 "
April	— 3 "
May	— 4 "
June	— 5 "
July	— 16 "
August	— 22 "
September	— 38 "
October	— 53 "
November	— 47 "
December	— 71 "
January	— 79 "
February	— 62 "

Total — — — 414 Cases

TABLE 5.—*Age Incidence*

Age	Cases
1 — 12 months	150
13 — 24 "	102
2 — 4 years	67
5 — 7 "	44
8 — 10 "	30
11 — 14 "	21

Total — — — — —	414

TABLE 6.—*Sex Incidence*

Males — — — — —	199
Females — — — — —	215

Total — — — 414

TABLE 7.—*Side of Lesions*

Right lobe	— 49 Cases
Left lobe	— 51 "
Bilateral	— 314 "

Total — — 414 Cases

EFFECTS OF TREATMENT

TABLE 8.—*Comparison In The Treatment of Pneumonia*

	Penicillin	Sulfadiazine
Number of Cases	120	226
I. RESULTS		
Recovered	56.2%	70.3%
Improved	23.0%	20.3%
Unimproved	10.8%	5.3%
Died	10.0%	4.0%
In less than 48 hrs. stay	— 9 cases	— 7 cases
Over 48 hrs. stay	— 3 "	— 2 "

II. IN THE RECOVERED CASES

Average length of Therapy —	5.3 days	5.4 days
Average amount given —	432,000 Units	16.6 Grams

DISCUSSION

A comparison of typical charts of penicillin- and sulfadiazine-treated patients showed that, with sulfadiazine, the temperature dropped almost by crisis after the second or third dose. Then a sudden rise up to about 38°C. was observed in 24 hours. This stayed for just about 4 hours, and then it went back to normal from the third day of treatment. The child showed marked clinical improvement also by the third day, and the lung findings cleared up within a week.

With penicillin the fall in temperature was not so steep; and, although there was also a spurt after 24 hours, the return to normal was more gradual, and it took approximately 4 days before the child became completely afebrile. As with sulfadiazine, clinical improvement was observed about the third day and lung findings cleared up within a week.

Except for very faint, transient morbilliform rash in 2 cases, untoward reactions were not observed in penicillin-treated patients. In the 226 sulfadiazine-treated patients, toxic manifestations were observed in 7 patients as follows: 3 developed generalized rash; 1 case had hyperpyrexia; 2 cases had vomiting; and 1 case had puffiness of the lids and hematuria. All of them improved upon withdrawal of the drug. None of these toxic manifestations were severe enough to be alarming.

CONCLUSIONS

1. From February 1945 to February 1946, 414 cases of pneumonia were observed in the Children's Department of the North General Hospital. This number was 300 more than the number of cases treated in the same hospital in 1944.

2. In the series of 414 cases in 1945, the recovery rate was 62.5% and the fatality rate was 1.9% as compared to the recovery rate of 38.0% and fatality rate of 17.7% in 1944.

3. Common childhood diseases like acute upper respiratory infections and measles are frequent predisposing conditions to pneumonia; and, definitely, infants below one year were found highly susceptible.

4. Penicillin and sulfadiazine were effective in the treatment of pneumonia; the average amounts given were 432,000 units and 16.6 grams respectively for a period of approximately 5 days. The response in the two groups was almost identical.

5. Although there were slightly more toxic manifestations with sulfadiazine (3.0%) than with penicillin (1.6%), they were neither permanent nor severe enough to cause alarm or even fear for the former drug.

6. Under present circumstances, since adequate doses of either drug will produce identical and an equally satisfactory response in moderate and uncomplicated cases, the cost, availability, and ease of administration make sulfadiazine a satisfactory drug, provided proper precautions are taken.

THE JOURNAL
OF THE
Philippine Medical Association

Published monthly by the Philippine Medical Association under the supervision of the Council.
Office of Publication, 547 Herran, Manila, Philippines

Devoted to the progress of Medical Science and to the interests of the
Medical Profession in the Philippines.

VOL. XXII

JUNE, 1946

NO. 6

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Editorial

ENTRANCE REQUIREMENTS FOR MEDICAL STUDENTS

This year the total enrollment of the colleges giving the pre-medical course is unusually large; and it is difficult to imagine how all these students could be taken care of—with most of our facilities destroyed by the war; and with new materials and equipment difficult, if not altogether impossible, to obtain either from the United States or from Europe. It is clear that we have somehow to limit the enrollment, and one way to do

it is to require of students seeking admission to first year medical classes at least *an extra year of preparation*.

There is, however, a far more significant and vital reason for this requirement. For, within the last decade or so, there has been a marked deterioration in the quality of the educational preparation given to students with ambitions to take up medicine as a profession.

The cause of this deterioration is not far to seek. The so-called vocational trend in education has shifted the emphasis from the classical study of the humanities. Instruction — the mere filling of the student's mind with facts — has taken the place of education—the drawing out of the latent physical and intellectual power of the student.

But it is far from sufficient for a medical student to have acquired nothing more than a disorganized body of facts. Like the medical practitioner, he should possess a broad cultural background. Having to deal with all kinds of people just when they are not at their best, he has to be familiar with all the vagaries of human nature. He must have a profound compassion for, born of a thorough understanding of, the travail of the body and of the spirit that the flesh is heir to.

This understanding, this sympathy, can be developed only through the systematic education, not only of the intellect, but also and particularly of the emotions. This is what is meant by a truly liberal education. It means a broad and comprehensive knowledge of the humanities — art, literature, and philosophy; languages, not only modern but also classic; as well as both the social and the natural sciences.

Medicine being an art as well as a science, the medical practitioner should have the mind of a scientist and the heart of an artist. He should not only know facts and how to classify and organize them; he should also and especially know how to make use of those facts, of the elements of knowledge, in such a way as to promote the well-being and the happiness of his fellowmen. That, after all, is the mission of the physician.

The physician is only as good as his training. That training, to be complete, must have a broad and solid cultural foundation. And *the extra year of preparation* cannot but help build that necessary foundation. — R. Ma. G.

Miscellaneous

ABSTRACTS FROM CURRENT LITERATURE

ABSTRACTORS

Isabelo Concepcion, M. D.

Walfrido de Leon, M. D.

Felisa Nicolas-Fernando, M. D.

Carmelo Reyes, M. D.

Effect of Certain Amino Acids on Healing of Experimental Wounds of the Cornea, by A. J. Schaeffer. Proc. Soc. Exp. Biol. & Med., 61:165, (February) 1946.

Fischer found that, in tissue cultures in vitro, the embryonic extracts could be replaced by an artificial medium in which amino acids furnished the building stones for the synthesis of protoplasm. Cystine, which seemed to function both as an energy-furnishing ingredient and as a growth catalyst, apparently played a major role in this medium.

Encouraged by Fischer's results, the author has made an attempt to influence the regeneration of experimental wounds of the cornea by administration of amino acids to this tissue in vivo. For the final experiment, 36 guinea pigs were used. In 18 of these animals, the amino acid solution was dropped into the right eye every hour, while the left control eye received a corresponding amount of salt solution. In the remaining 18 animals, an ointment containing the amino acids was applied twice a day to the right eye, together with a 5% boric acid ophthalmic ointment, which was applied to both eyes.

The amino acid solution was made in 6% sodium chloride and contained 2 mg. cystine, 5 mg. proline, 6 mg. asparagine, and 14 mg. glutamine per cc.; and was adjusted to pH 7.2.

The result of the experiment was a complete regeneration of the corneal defect in the eyes treated with amino acids. This was achieved within 12 to 42 hours, while the healing process in the control eyes required 55 to 120 hours.—I.C.

Folic Acid Therapy in Macrocytic Anemia of Infancy, by W. W. Zuelzer, and F. N. Ogden, Proc. Soc. Exp. Biol. & Med. 61:176, 1946.

This report presents the results obtained with the four patients, the data on whom have been calculated. The patients were white infants ranging from 2 to 12 months in age, one male and three females. All came from average homes and had been well cared for. The clinical picture was not characteristic. The pertinent findings of the physical examination on admission to the hospital were marked palor, usually a slight cardiac enlargement, and a soft systolic murmur. The spleen was moderately enlarged and firm. All patients had severe macrocytic anemia accompanied by moderate to marked diminution of the blood platelets. A few nucleated red cells were invariably present in blood smears and often suggested a megaloblastic origin.

Treatment with folic acid was not begun until preliminary observation had established the absence of a spontaneous reticulocytosis. The response to folic acid treatment was characterized by a rise in the reticulocyte count on the third or fourth day, which reached the maximum on the 6th or 7th day and was followed by steady rises in the hemoglobin values and red blood cell count. Characteristic changes in the bone marrow took place as early as the 4th day.

The authors consider the folic acid therapy as specific in this type of anemia for the following reasons: (1) It produces an adequate reticulocyte response, followed by a marked lasting improvement in the red blood count and hemoglobin value; (2) Equally important the megaloblastic pattern of the bone marrow is transformed into a normoblastic one.—I.C.

Treatment of Sprue with Synthetic L. Casei Factor (Folic Acid, Vitamin M), by W. J. Darby, and E. Jones, Proc. Soc. Exp. Biol. & Med. 60:259 (November) 1945.

This is a report on two cases of sprue treated with synthetic L. casei factor (Folic acid, Vitamin M.) The authors found that four days after intramuscular injection of 15 mg. of the synthetic L. casei factor, the symptoms of glossitis disappeared. On the ninth day, the reticulocytes reached a peak of 15.3%; and a marked increase of thrombocytes was noted. The hematological improvement continued, accompanied by marked general betterment, including regeneration of the lingual papillae, subsidence of the diarrhea, and a considerable gain in weight.—I.C.

Effect of Pyridoxine of Granulopenia Caused by Thiouracil, by E. H. Fishberg and J. Vorzimer, Proc. Soc. Exp. Biol. & Med. 60:181 (November) 1945.

This is a report on eight hyperthyroid subjects receiving the usual dose of thiouracil plus 200 mg. of pyridoxine given daily by mouth. The authors found that previous to the administration of pyridoxine owing to the destructive effect of thiouracil on the bone marrow, the granulocyte count dropped from 3700 to 400 cells per cu. mm. within 2 days. Administration of 200 mg. of pyridoxine hydrochloride by injection resulted in an increase to 1800 granulocytes per cu. mm. within 2 hours. This was repeated on 4 successive days (thiouracil being withdrawn), with an increase of the granulocytes count to 4900 cells per cu. mm. According to the authors, the results of their treatment seems to indicate that pyridoxine can bring about a rapid and significant rise in the number of circulating granulocytes in the blood in human subjects after a depression caused by thiouracil. Although there is a large element of self recovery after removal of the toxic agent, there seems to be no doubt that the recovery process is much accelerated by pyridoxine.—I.C.

The Availability of Ascorbic Acid in Papayas and Guavas, by Eva R. Hartzler, J. Nutrition, Vol. 30, No. 5, 355 (November) 1945.

The availability of the ascorbic acid of papaya and guava juice was determined by comparing the urinary excretion of ascorbic acid by human subjects maintained on a diet low in ascorbic acid: (a) when receiving 75 mg. of synthetic ascorbic acid per day; and (b) when receiving an equivalent amount of ascorbic acid in the form of papaya or guava juice. Two experiments involving a total of fourteen subjects (eight men and six women) were carried out.

The author found no significant difference in the availability of the ascorbic acid of papaya or guava juice as compared with synthetic ascorbic acid in either experiment.

In studying blood plasma ascorbic acid level, the author found that subjects receiving 75 to 80 mg. of ascorbic acid per day over a period of 5 weeks maintained plasma levels of from 0.7 to 1.0 mg.%.—I.C.

The Taft-Smith-Ball National Health Bill, (Editorial) J. A.M.A. 131:289 (May 25) 1946.

Senator Taft of Ohio introduced into the Senate early in May a program for health which was promptly hailed by the press as an opposition measure to the Wagner-Murray-Dingell bill. The measure introduced by Senator Taft emphasized the creation of a national health agency under which all health functions of the federal government would be administered. It was referred to the Senate Committee on Education and Labor, which is now conducting hearings on the current Wagner-Murray-Dingell bill. This agency would be directed by an administrator for whom the Surgeon General of the United States Public Health Service would substitute when necessary. The main portion of the bill would appropriate two hundred million dollars annually for the next five years to be allocated to the individual states in order that they might be encouraged to provide hospital, surgical and medical service for those in need or those able to pay only in part. The plans developed in the individual states would require approval by the Surgeon General of the United States Public Health Service, but, on failure to approve, the state agency could appeal to a National Health Council. This council would consist of the Surgeon General ex officio as chairman and eight members appointed by the administrator. Five of these would be persons well known in the health field, and at least three

would be doctors of medicine. The other three would be persons familiar with the needs for medical care.

Another section of the bill would provide dental health service through allocation to the individual states and would also provide for research, including particularly neuropsychiatric research.

Finally the measure would permit government employees to allow deductions from their salaries for participation in health insurance plans.

The measure proposed by Senator Taft obviously does not aim at the nationwide inclusiveness of the Wagner-Murray-Dingell bill. Neither does it require nationalization of the medical profession. From the point of view of a scientific attempt to move forward along the lines of extending medical services, it would not revolutionize medical care. The bill is therefore preferable to the measure it opposes.—F. N. F.

Single Injection of Penicillin Oil Beeswax Mixture in Gonorrhoea, by B. D. Chinn, S. Olan-sky and I. G. Murphy, *Medical Annals of District of Columbia, Washington*, 15:55-98 (February) 1946.

Chinn and his associates used a peanut oil mixture which contained 300,000 units of penicillin per cubic centimeter. The penicillin oil beeswax mixture consists of 4.8 per cent beeswax in peanut oil in which is suspended calcium penicillin. The material is solid at room temperature and must be well warmed and liquefied before use. Injections were made into the gluteal muscle with a 2-1/2 inch needle, gage 18 or 19. One cc. or a single dose of 300,000 units was administered. A total of 115 cases of gonorrhoea were treated. A cure rate of approximately 95 per cent was obtained. Cultures were made after forty-eight hours and seven to ten days following treatment. This method appears to be a highly satisfactory procedure and suitable for both clinic and private practice. The possible coexistence of syphilis should be kept in mind, and periodic serologic tests for syphilis should be made over a 90-day period.—F. N. F.

SOCIETY PROCEEDINGS
SECTION ON
OPHTHALMOLOGY AND OTOLARYNGOLOGY

May 9, 1946
39th Annual Meeting
Philippine Medical Association

Dr. A. S. FERNANDO, *Chairman of the Section, Presiding*
Dr. JOSE N. CRUZ, *Secretary*

ABSTRACTS OF THE PAPERS

Chairman's Address—

Dr. Antonio S. Fernando
President, Philippine Ophthalmological and Otolaryngological Society.

My dear Friends and Colleagues:

I am scheduled in our program to give an address. It is the usual practice in the A. M. A. for the chairman of a section to give an address on an important scientific subject about which he has made a long and careful study. And because the Philippine Medical Association is patterned after the great American Medical Association, I am also probably expected to do the same.

But this time I hope I will be excused from that great responsibility, in view of the shortness of time to prepare an address. The subject of intra-cranial complications of otitic origin is close to my heart; and, if I had been given more time, I would have gladly talked on it.

I believe that it should be the practice in the Philippine Ophthalmological and Otolaryngological Society for the President to outline his general policies at his installation. Then, at the Sectional Meeting of the Annual Meeting of the P.M.A., he should discourse on a scientific subject in which he is much interested; and, at the Annual Meeting in November, he should report on the accomplishments of his administration, and should express his personal opinion regarding the future of the Society in particular, and on our specialties in general.

Our Section is the first approved by the Philippine Medical Association. This is a source of gratification for all of us. Our specialties are thereby given the splendid opportunity to thrive and develop and become robust as we want them to be. The Philippine Medical Association is generous to our Section, perhaps because it is the first regular Section to be affiliated to it.

The proceedings of our Inaugural Meeting was published in the February issue of the Journal, and we can have reprints for distribution to our members and to EENT Societies throughout the world.

I have already made contacts with several famous societies in America, and these have promised to send us records of their transactions. We will have them in our library. Let us exert all our efforts to have a library, of which we can be proud.

Incidentally, since our country, is affiliated with the United Nations Organization, it is bound to become better known abroad. It follows that our National Medical organization will also acquire greater prestige.

As Editor of the Journal of the Philippine Medical Association, I have already received requests for exchanges from many parts of the scientific world. This cannot but enhance our responsibility to raise the standard of our practice and to advance our knowledge. The prestige of the Journal will depend, not upon the Editor, but upon the quality of papers published in it. These papers should be the results of intensive and careful investigation; extensive reading; judicious consideration of the subject under study; logical deduction of the principles involved; and clear, accurate, and forceful presentation. To give an incentive to the writing of good articles, the Council of the Philippine Medical Association, I am happy to tell you, has approved a recommendation to give prizes for the first and second best articles to appear in the Journal in a given year.

An important activity of our Society, specified in our Constitution, is the giving of practical post-graduate courses and demonstrations. In drafting our Constitution and By-Laws, I had in mind the injunction in the Oath of Hippocrates to pass on our experience to our young brothers in the profession ". . . . teach them this art (medicine) if they shall wish to learn it, without fee or stipulation" Dr. Reyes will announce to you presently the schedule of the course his committee has prepared. Next year, we hope to announce this schedule earlier, to give time to our own members and those other members of the Philippine Medical Association who may be interested to attend.

Founding a Society and keeping it alive and robust is a difficult matter. But even though its membership is small, if all the members are greatly interested in its welfare, it is bound to succeed.

In the Calcutta Medical Journal for November 1945, volume 42, is an article entitled "Ophthalmology in India" by B. N. Bhaduri, Professor of Ophthalmology, Carmichael Medical College, Calcutta. He had delivered this as an address when he was the guest speaker at the Inaugural Meeting of Bihar Ophthalmological Society, August 18, 1945. I would like you to read this article. Among other things, he said, "It is not quite easy to start an Association like yours, far less maintain it. I can tell you from my personal experience that it is an extremely difficult job. Would you be surprised to learn that the United States of America, where at the present moment nearly one hundred ophthalmological societies are successfully functioning, the largest number that any country in the world can boast of, had for ten long years the strange experience of only two members attending the meetings of one of these societies."

My dear friends, there is an excellent example of perseverance. May we also have that virtue! I thank you.

OCULAR WAR INJURIES

A. R. UBALDO, M.D. AND C. V. YAMBAO, M.D.

The cases of ophthalmic war injuries studied in this report consisted of the casualties among the civilian population in the City of Manila and its environs from September 21, 1944, to January, 1945. A total of 14 cases of unioocular war injuries due primarily to bomb explosion was studied. The injuries were classified as follows: (1) Ocular war injuries from concussion with one case of retinal detachment; (2) Ocular injuries from penetration with or without a foreign body—11 cases constituting the majority of the ophthalmic injuries having a percentage of 78.57%; (3) Wounds of the lids and orbit with 2 cases.

First aid measures as regards asepsis and antisepsis were instituted the moment the patients were admitted in the hospital. Although antitetanic serum was not administered in the majority of our patients due to its limited supply, tetanus was not observed in our patients. The importance of localization of foreign body in the eye or orbit was emphasized. Enucleation was done in 9 patients with perforating injury of the globe. One important observation noted in the enucleated eye after the operation was that the amount of damage or the extent of the injury

was much greater than the external appearance of the wound would warrant. So far, sympathetic ophthalmia was not observed in our patients probably due to early preventive enucleation.

LOCAL INSTILLATION OF PENICILLIN IN ACUTE CATARRHAL CONJUNCTIVITIS

GREGORIO FARRALES, M.D.

St. Luke's Hospital and Asable College of Medicine

The successful results of penicillin in ocular infection has been shown by the works of Keyes, Struble, Bellows, Floreys, Von Sallmann, and Meyer. According to the investigations of Struble, the topical application is the most suitable form of administration for external infections of the eyeball and adnexa.

Encouraged by the remarkable results of these workers, I tried clinically the local instillation of this drug during a small epidemic of conjunctivitis which was observed in the dispensary of St. Luke's Hospital.

Medication and Dosage Local.—The dose was 1000 to 2500 units per cc. The instillation was 1 to 2 drops every hour for 3 to 4 hours in every acute cases, then every 2 hours. In other cases 1 —2 gtt. every 2 hours, then every 3 hours.

Results of treatment in 60 cases:

Cured	52%
Improved	16%
Unimproved	1%
Worse	1%
Unknown due to failure to report	30%

Duration of Treatment.

12 hours	1%
24 "	40%
48 "	23%
3 days	5%
7 "	1%
Unknown due to failure to report	30%

Obviously, the maximum effect of penicillin occurs during the first and second day of treatment.

COMMENT

Penicillin is a very effective drug in the treatment of acute conjunctivitis. The more acute, the better the effect. The relief is prompt and rapid, the effect is felt in a few hours. Symptoms of pain, photophobia and discharge quickly disappear. The last to disappear is redness. The action is sometimes startling and marvelous. It shortens the number of days of treatment and is very much better than that afforded by other medications such as argyrol and other silver preparations.

DISTURBANCES OF THE ASSOCIATED OR CONJUGATE MOVEMENTS OF THE EYE

GEMINIANO DE OCAMPO, M.D.

This paper is based on the records of six patients before and during the last world war. The first case one of complete Parinaud's syndrome (paralysis of convergence, upward and downward gaze); the second was an incomplete Parinaud's syndrome (paralysis of upward gaze with paresis of downward gaze); the third was a conjugate deviation to the right; the fourth

had a paralysis of lateral conjugate movements and convergence; the fifth was a divergence, paralysis; and the last had convergence and divergence paralysis with paresis of upward movement.

It is fortunate that the last three cases were followed up to the autopsy. This has added to the literature further clinical evidences of the presence of a supranuclear mechanism around the third and fourth ventricles, the disturbances of which by a tumor, for example, as in these cases, caused associated ocular paralysis. It is, however, unfortunate that anatomical localization was not so definite as in other cases previously reported.

The following observations in these cases are worth remembering: Disturbances of divergence and convergence should be kept in mind in cases where diplopia is a complaint and can be elicited throughout the visual field, especially when no definite squinting is present. In any case of disturbance of the associated or conjugate ocular movements, a brain tumor and encephalitis should be considered among other causes. Whenever a brain tumor is suspected, the presence of paralysis of any associated or conjugate movement is a localizing finding. Functional tests of the vestibule and hearing are necessary for the full interpretation of disturbances of the associated movements of the eyes.

CHRONIC IRIDOCLYLITIS WITH OCCLUSIO ET SECLUSIO PUPILLAE

HERMINIO VELARDE, M.D.

E. de O., 28 years, was admitted to the Philippine General Hospital on August 21, 1942, for blindness of both eyes. About three years before she had had attacks of dull headache with slight dimness of vision. She had had pains and redness of both eyes and her vision had become worse.

The worst attack had come about six weeks before she was admitted to the hospital. She had rather severe and persistent headaches with continuous lachrimation, and her vision was greatly reduced. These symptoms gradually abated, but the vision continued to become poor.

On admission she was fairly strong, but rather poorly nourished. Physical examination showed that all her systems were normal. Eye examination showed that her vision was limited to light projection. There was some circumcorneal injection of both eyes. Intraocular tension was noticeably reduced on palpation; and, with Schiötz's tonometer, was 8 mm. of mercury. The anterior chambers were shallow and both pupils were non-mobile and covered with whitish organized exudates. Pupils dilated neither with atropin nor with atropin and adrenalin sub-conjunctival injections.

After the active stage of the eye inflammation had subsided, both eyes were submitted to operation in several sittings.

On September 1, 1942, optical iridectomy was performed on the right eye. Tissue of the iris about 3 mm. in diameter was removed from the upper outer quadrant. The lens was found cataractous.

On September 12, iridectomy and cataract extraction were performed. The technic was as follows: Under cocain local anesthesia, with a Graefe knife, corneal section with conjunctival flap was made. The iris was adherent to the underlying structures. With iris scissors, a circular incision of iris, about four mm. in diameter was made. The detached iris with the lens underneath was removed with the capsule forceps by "torsion and sommersault extraction." Vision immediately improved and moving fingers were seen by the patient. Healing was good; but the iris closed again, and another iridectomy was performed on September 26.

The left eye was submitted to same operation. The iris of both eyes required two post-operative iridectomies—the last one for the right eye on January 16, 1943. This last operation was in the nature of iridotomy. The eyes, after this last operation, remained in fair condition; and, three months later, or March 1943, her vision enabled her to count fingers at about five feet distance with the right eye, and at about two feet distance with the left eye. With + 4.00 sph. her vision was improved.

RETROPHARYNGEAL ABSCESS IN CHILDREN

A. R. UBALDO, M.D. AND J. N. CRUZ, M.D.

Upper respiratory obstructive dyspnea as a symptom-complex in respiratory diseases is commonly observed. Of the many varied causes of this symptom-complex, a retropharyngeal abscess should always be considered as a strong possibility, especially in children.

In this series of cases admitted to the Philippine General Hospital from September 1940 to April 1946 inclusive, we have 10, five of which or 50 per cent were below one year of age.

As to etiology, almost all of our cases were either associated with, or accompanied by, some degree of enlargement of the cervical lymph glands. The disease seemed to start as an infection of the lymph glands and to extend gradually to the retropharyngeal tissue. Scrofulous diathesis was very common.

The predominant symptom manifested on admission was upper respiratory obstructive dyspnea, so that an emergency treatment was always deemed necessary.

Representative case reports with comments were given in this paper.

PRACTICAL CONSIDERATIONS IN REFRACTION

FELISA NICOLAS-FERNANDO, M.D.

The writer records her experience in refraction work during the last 25 years of private practice and 12 years (1929-1941) in the University of the Philippines Infirmary, where it was not uncommon to have from 10-15 cases of refraction a day. Five hundred fifty-four eyes with errors or refraction observed within the past eleven months were analyzed.

This paper appeared in the April, 1946, issue of the Journal of the Philippine Medical Association.

THE FOGGING METHOD OF REFRACTION

GEMINIANO DE OCAMPO, M.D.

This is an attempt at clarification and appraisal of the objectives, indications, method, usefulness, and limitations of fogging. The subjects for study are private patients within the last eight years.

The records of 58 cases where both fogging and cycloplegia were used are grouped and analyzed. In 42 per cent, fogging and the usual method of cycloplegia were equal; while, in 12 per cent, they were almost equal in uncovering and measuring the true condition of the ametropia. In 10 per cent, fogging was superior to the cycloplegia as far as the degree of relaxation of the ciliary muscle attained was concerned; while, in 24 per cent, the use of atropine uncovered a greater amount of ametropia than fogging.

However, in this last group, only one case gave 0.75 S and two gave 0.50 S, while all the rest (78.2 per cent) gave 0.25 S in favor of atropine. In 6.9 per cent, the findings from fogging were more in one eye but less in the other eye than those under atropine, by 0.25 S to 0.50 S. These reversed results are neutral as far as the choice between the methods of refraction is concerned. In 5 per cent, with irritable or unstable ciliary muscle, atropine was decidedly superior to fogging in determining the strength and axis of the astigmatism.

An almost equal number of cases (55) where prescriptions for lenses were mainly based on the results of fogging, were also analyzed.

From all these, it seems that, for clinical purposes, fogging is an effective way of controlling accommodation almost equal to, if not better than, the ordinary cycloplegia, except probably in 10 per cent of cases where the ciliary muscle is either spastic or irritable with ever-changing tone.

In prescribing, it is preferable, in some cases, to err towards a little undercorrection by deducting .12 D to 0.25 D from the value obtained in fogging, than to be carried by the

misconception that fogging is generally inferior to the usual cycloplegia in uncovering latent hyperopia. The results of this study justify its wider clinical use by ophthalmologists and opticians, when properly indicated and correctly done.

LOCAL INSTILLATION OF PENICILLIN IN CHRONIC SUPPURATIVE MAXILLARY SINUSITIS

JESUS TAMESIS, M.D.

Fifteen cases of chronic suppurative maxillary sinusitis were treated with local instillation of penicillin after displacement irrigation with normal saline. No bacteriologic determination of the causative organism was made. Fifty thousand units were instilled daily after irrigation for varying periods of time. Attempts were made to keep the drug inside the sinus by means of positional rests favorable to penicillin retention.

A patient was declared completely recovered if, after 3 or 4 days of irrigation without penicillin, no mucoid discharge was passed out. Incomplete recovery was declared for those cases who continued to have mucoid discharge but who were relieved of other subjective complaints. Average follow up was 5.8 months and ranged from 4 to 8 months. Eleven cases (73%) completely recovered. Four cases (36%) had recurrences. Average recurrence period was more than 5 months. The rate of recovery was found to be independent of the chronicity of the disease.

Penicillin exerted strong deodorant effect on the foul suppurative cases. Local and constitutional improvement was observed in all cases. The therapeutic value of this mode of administration is thus proven and should benefit patient unable to undergo radical intervention.

FOREIGN BODIES IN THE FOOD AND AIR PASSAGES

JOSE N. CRUZ, M.D.

Foreign bodies as a cause of diseases of the food and air passages have been often commonly observed. This paper presents an analysis of 95 consecutive cases of foreign bodies in the food and air passages removed by the author at the Bronchoscopic Clinic of the Philippine General Hospital. In 76 of these 95 cases, the foreign bodies were in the oesophagus; and in 19, in the respiratory tracts. The different foreign bodies and their incidence, the location of the foreign bodies in the oesophagus and respiratory tract, and the age incidence were discussed.

The most common symptoms, the diagnosis, and the complications were also given.

Bronchoscopy and removal of the foreign body was the only treatment worthy of consideration. Complications were treated accordingly.

ACUTE EPIGLOTTITIS

DR. C. V. YAMBAO

This article was written on account of the scarcity of the literature on the subject. Fifteen cases of acute primary epiglottitis admitted in the Eye, Ear, Nose and Throat Department of the Philippine General Hospital were studied as regards etiology, symptomatology, diagnosis, and treatment.

The disease has a tendency to attack the young and middle-aged males. The symptoms of acute epiglottitis are like those of any other acute tonsillar infection. Of these, dyspnea is the most prominent.

The author emphasized the importance of a vigilant watch of the patients' breathing. Scarification and incision are considered to be the best forms of treatment under direct laryngoscopic guidance. The average number of days of hospitalization is seven. Sulfadiazine given together with penicillin shortens the course of the disease to 4-5 days.

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Pio de Roda, Alfredo: Typhus Fever in the Philippines: Weil-Felix Reaction of 500 Cases, Journal Philippine Islands Medical Association, 17:147-156 (March) 1936.

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