dition existed before the epilepsy in this patient. In other words, it may have been the cause of the epilepsy. In one case, Case 2, there is consanguinity and epilepsy in two uncles, but it must be borne in mind that anomalies of the viscera, such as ptosis, are sometimes hereditary and that epilepsy in this patient may be the result of an inherited tendency toward enteroptosis rather than of inherited "instability of the nervous system."

CONCLUSIONS.

A great deal of work has been done to demonstrate the presence of certain toxins in the secretions and excretions of epileptics, but probably this is the first, or one of the first, attempts to determine with the aid of the x-ray the frequency of gastric and intestinal stasis in a series of such cases and the relation of the amount of stasis to the severity of the disease. In this group of cases the concomitant variation of the severity of the disease with the amount of stasis would indicate a causal relationship. In the study of many cases of epilepsy in young children at the Children's Hospital, the writer came to believe that the gastro-intestinal disturbance preceded the epilepsy and was not merely a symptom. It must, of course, be admitted that the vast majority of individuals who suffer from stasis do not have epilepsy, but in the writer's experience they do have headache, vertigo and other nervous symptoms caused by the toxemia that results from stasis. These symptoms of toxemia are of all shades of severity so that sometimes the diagnosis between these conditions and epilepsy is made with great difficulty and, it may be said, arbitrarily.

While nothing can be proven by so small a series of cases, the writer feels reënforced in a belief that in so-called "idiopathic" epilepsy the essential lesion is not in the nervous system.

If it be true that epilepsy does not imply a defective central nervous system with a tendency to degeneration in the cells of the cortex and consequent mental deterioration, then the social status of the epileptic will have to be reconsidered. Laws designed to prevent the propagation of epileptics should then be so phrased as not to bar from marriage those in whom the disease is curable and probably not transmissible as such. A law barring from marriage the syphilitic, the alcoholic, the feeble-minded and the insane would in effect bar those epileptics who ought not to be permitted to marry.

Finally, if it can be definitely established that the phenomenon known as "idiopathic," "inorganic" or "true" epilepsy is produced by a toxemia and that this toxemia is the result of stasis in the gastro-intestinal tract, the prognosis should be much better than it is at present, provided that the physician be equipped, not with drug therapy alone, but also with a knowledge of mechanical therapeutics, and that he use the

bromides only as an adjunct to other treatment. A new exercise and a new method of self massage for the treatment of stasis will be described in a subsequent paper.

The writer wishes to acknowledge the kindness of Doctor Philip Coombs Knapp and Doctor John Jenks Thomas in permitting him to use the material of the clinic, and to thank Dr. S. W. Ellsworth for his valuable aid in interpreting the plates, and the assistants in the X-ray Department for their help in this work.

Clinical Department.

HYSTERIA WITH FEVER AND ANKLE CLONUS; A CASE REPORT*

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Summary of Case. Female, aged 22, presenting as evidence of hysteria persistent vomiting, variable losses of consciousness without epileptiform characteristics, hemianesthesia and mutism, had in the course of her stay in hospital, a sharp rise in temperature lasting one hour and unilateral ankle clonus of a persistent type. No Babinski, Gordon or Oppenheim, Wassermann reaction (blood and spinal fluid) fundus and color fields were negative. Recovery.

The patient, an Irish girl of 22, entered the Psychopathic Hospital on Nov. 5, 1912. Her history summarized is as follows:—The family, both remote and immediate, have been quite normal people. Father and mother, brothers and sisters have had no nervous or mental diseases. Grandparents lived to old age. The only peculiarity presented is a family tendency to turn gray early.

She was educated in a convent and up to her fifteenth year showed no differences from the rest of the family, either in development, temperament, behavior or disease history. At about that period of her life she began to be troubled by pains in the abdomen, accompanied or followed by vomiting. These pains had no relation to the ingestion of food or the nature of her diet; they were sharp, localized to the upper abdomen and severe enough to prostrate her. The vomitus was usually clear and contained no blood. These symptoms became intensified on her arrival in America and occasioned the almost constant care of physicians, as well as two stays of one month each in a large hospital of this city. At about the same time she had "fainting" spells, said to be caused by worry

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or reproof of any kind, and characterized generally by their variable duration (fifteen minutes to a day) and by the fluctuation in intensity of the disturbance in consciousness which varied from semi-consciousness to apparently complete loss. There were at no time convulsive movements, relaxed sphincters, or injury. Despite the frequency of these gastric disturbances and these alarming syncope, she remained a well nourished person. She became a familiar figure in a large neurological clinic and was often pointed out as a typical hysteric with predominating gastric symptoms.

In June of 1912, she came into the hands of an internist who, after examination of her stools, made a diagnosis of duodenal ulcer. She was operated upon; an old duodenal ulcer with definite scars and adhesions and another ulcer near pylorus with puckered scar, were found. The appendix was embedded in adhesions. A posterior gastroenterostomy and appendectomy were performed; there was a good recovery (June 21.) Following the operation, patient remained well until about Sept. 11, when she began to have pain in the right side, in the chest down near the sternum, and vomited a great deal. From then on until entrance into the hospital her trouble grew, until it reached its climax on Nov. 5. On that date, while in the office of the internist, patient was seized with a "convulsive attack" which to him appeared hysterical. She closed her eyes, stiffened her muscles and gave vent to slow, sighing sounds. She did not fall out of the chair; did not bite her tongue. Remained in this "unconscious" condition for a long time, during which time she was brought to the Psychopathic Hospital.

Condition during first day in hospital:—She lay in bed her eyes closed, moaning continually and tossing her head from side to side, her hands pressed to her abdomen. The words she uttered could not be distinguished, except for the name Hannah whom she called upon frequently to help her. No definite answers to questions could be elicited.

Patient is well nourished; face is pale, hair streaked with gray. Temperature 99.6 by rectum; pulse 98, moderate tensions, regular. Hands warm. No symptoms of collapse. Circulatory system negative; lungs negative. The abdomen is held rigid, but uniformly so,—rigidity apparently due to voluntary muscular contraction; no masses to be felt; tympany is moderate and there is uniform tenderness. Nervous system,—pupils cannot be examined; patient does not open her eyes on command, although she apparently makes the effort, as the eye lids flutter to and fro and the forehead wrinkles into several horizontal ridges. Active effort on the part of examiner to open the patient's eyes is resisted. There are no other facial palsies. Tongue protrudes straight and facial movements are good. No paralysis of arms or legs, although patient will not stand or walk. Reflexes of the arms are increased, including the triceps and deltoid contraction as elicited from the ulnar styloid. Knee-jerks and ankle-jerks very lively and active. Adductor responses are elicited from internal condyles, shaft of tibia and sole of foot. No abdominals (rigid muscles), no Babinski, Gordon or Oppenheim, no clonus. Sensory examination, no pain reaction when right half of body is

pricked with a pin; definite when left half is so stimulated. When right eye is opened forcibly, conjunctiva can be pricked with a pin, no reaction; on left side there is definite reaction to pin point.

When patient is given a drink of water she vomits a grayish, odorless fluid. This, however, occurs without her swallowing any liquid, it being only necessary to touch the inside of mouth to provoke the vomiting symptom.

At this time and at all later times attempts to hypnotize failed. Suggestions had no effect upon her symptoms.

November 7:—Stomach analysis,—fasting contents not obtained. Stomach washed; washwater came back tinged a greenish yellow color and had suspended in it a small amount of fine material. Test for lactic acid, 0; hydrochloric acid, slightly +; guaiac, 0; no acetone or bile. Microscopic examination of centrifuge sediment showed a small amount of epithelial cells and a very small amount of microscopic food particles which, tested by iodine, proved to be starch. No Boas' bacilli. Urine was negative throughout the disease; patient was untidy for a few days and the specific gravity in the small amounts obtained was 1035. The blood picture was, with the exception of white count of 10,600, negative.

Temperature at first ranged from 99 to 100.2 by rectum. On the second day of her stay her sister (the Hannah of her moanings) visited her. She became agitated, vomited almost continually and at the end of the visit her face was much flushed. Her temperature was taken by rectum and found to be 105.2,—pulse rate 125. Everyone connected with the case became very anxious and a perforation was suspected. An hour later temperature was again taken with the same thermometer and found to be only 100.2, which it had been earlier in the day,—a drop of five degrees in one hour. From then on, her temperature slowly became normal.

By November 22 patient had become able to sit up. For over two weeks she had been fed by rectum and on the date mentioned had, for the first time, taken all her nourishment by mouth. Vomiting had practically ceased by that time except when she had visitors or when physicians questioned her closely or disturbed her. At this time she answered such questions as were put to her well enough to make it apparent that she was oriented, had no delusions or hallucinations, and had preserved her memory for remote occurrences intact; she claimed to be unable to remember the events of her stay in the hospital, but close questioning showed that this defect was more apparent than real.

Physical examination made on that date (November 22): Her eyes could now be partly opened voluntarily. Under such conditions pupils could be said to react to light. Reflexes were still very lively. No response, either of plantar or of dorsal flexion, to stimulation of sole.

Ankle clonus elicited on attempting ankle jerk on right. By ordinary methods a regular, uniform clonus was obtained, which lasted indefinitely and had a rhythm of about 200 to the minute,—the leg seeming to be relaxed all the time. After the foot was let go, the clonus lasted for at least half a minute, the rhythm then being slightly slower. On left there could be elicited a few irregular

jerks of the type usually described as spurious clonus.

Fifteen minutes later no clonus could be elicited, although feeble rhythmic responses were obtainable. However, the ankle clonus first described was again elicited during her stay and demonstrated to the hospital staff. Its character, apparently in no way distinguishable from that seen in organic disease, suggested the possibility of such disease. The eye grounds were examined and found to be normal; the visual fields for perception of objects and for color discrimination were not in any definite way changed. The blood was negative to Wassermann, while the spinal fluid to the butyric acid and the ammonium sulphate tests was negative to globulin; there was no lymphocytosis; negative to Wassermann. The negative character of these tests and the fact that with the ankle clonus there was no associated spasticity, no Babinski, or paralysis, together with the course of the disease to recovery rules out, so far as it is possible in life, any organic disorder. The previous history, the bizarre vomiting, the excessive reaction to a possible organic disease of her stomach, the ptoses of both upper lids, the hemianesthesia and hemianalgesia together with the recovery in five weeks make up a syndrome hardly to be classed as other than hysterical.

Without entering into a complete account of the literature it is interesting to note some of the important opinions on the subject of ankle clonus and hysteria.

Gowers states that a uniform, persistent clonus such as is common in organic disease is extremely rare in hysteria, and his whole attitude seems against admitting such a phenomenon in the disease. Oppenheim, while conceding the extreme rarity of the phenomenon, positively asserts its existence and quotes some of the older writers as having reported cases in which it appeared. Schuster agrees with Oppenheim, while the best that Church will say is that a spurious ankle clonus is found in hysteria,—a fact conceded by all the writers. Dejerine and Norero report a case very similar to the one here considered, in which there was "true" ankle clonus on left with a few clonic movements on right. Raymond cites a similar case.

Worthy of special consideration are the views of Babinski. This dogmatic writer is particularly positive on the subject of ankle clonus. He distinguishes two varieties of clonus, the true (*epilepsie spinale vraie*) and the false (*epilepsie spinale frustre*). The first appears in organic disease and presents the following characteristics: It can be elicited at each examination with the leg relaxed, the movements are constant; if attention is distracted the clonus does not disappear or change. The second differs in that it requires innervation on the part of the patient and therefore disappears when her attention is distracted, and it is regular neither in character nor ease of elicitation.

H. Claude and F. Rose in a graphic study of the two types of clonus, the first in organic disease and the second in hysteria, agree in their conclusions with Babinski and add other points of differentiation. The difference in regularity of oscillation to a large extent disappears when the hysteric fixes her attention on the process; or, in other words, the clonus takes on a more organic character when she coöperates. Moreover, the rate in organic clonus is 4 to 6 oscillations per second (here they disagree with Weir Mitchell, 7 per second, and Horsley, 8 to 10 per second),—while in hysterical clonus it becomes very rapid, 12 to 14 per second. In other words, a voluntary innervation can bring about a more rapid oscillation than the organic.

Criticising Babinski's statements, Lewandowsky says that his criterion that the clonus must always be elicitable to be considered organic would throw out much of the clonus found in undoubted organic disease. This statement will probably be verified by the experience of most neurologists, for even in hemiplegies and other diseases of the pyramidal tract, clonus is often fugitive, hard to elicit and not persistent. Concerning the statements of Claude and Rose, it is essential to note that their statements regarding organic clonus are based on the examination of two cases that were picked because the clonus was uniform and regularly elicitable. It does not seem to have occurred to these writers that in picking their cases as they did they were begging the entire question of the character of organic clonus.

Lewandowsky states that if clonus is found on one side and not on the other it is almost surely organic. It is true that the unilateral clonus should arouse grave suspicion, as should any clonus,—but a hysteric patient may have a paralysis of one extremity and not of the other; may have a hemianesthesia (this being the current opinion despite Babinski's dictum that there is no real anesthesia to hysteria); may have unilateral contractures, etc. If the possibility of bilateral clonus be conceded there is *a priori* no impossibility in unilateral hysterical ankle clonus,—a conclusion which in the case here cited seems verified by fact.

The writer takes this opportunity of thanking Dr. E. E. Southard for the privilege of reporting this case and also wishes to express his obligation to the members of the Hospital Staff, who have aided him in many ways.

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