A Paper

ON

BODILY DISEASES IN MENTAL DISORDERS

BY

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Although for the sake of convenience it is customary to make a distinction between mental and bodily disorders, such separation of the two is physiologically unsound. Every disorder, however slight or localized, must give rise to reactions in every part of the organism. Sometimes the local reactions are manifest while the distal are too slight to produce recognizable effects. At other times the reverse is the case: the local reactions are so slight as to be overlooked, while the distal are manifest and predominate. Thus in one group of cases, although the primary site is in the higher nervous centres, yet the predominant effects show themselves as some bodily disorder. Many cases belong to this group. In the second and smaller group the primary site is a bodily lesion, but its chief effects take the form of mental disorder. A proof that these two groups exist is to be found in the fact that recovery takes place in each when—and not until—the primary seat is made right.

It is assumed here that one is dealing with a single pathological process acting upon an otherwise normal organism. There is, however, another aspect of the matter. Disease may arise in an organism which is already abnormal. Such dual pathology may be viewed from more than one angle. Thus it is well known that various fevers which make a normal person delirious may make mental patients, for the time being, less insane than before. The mental change in general paralysis during malarial infection is a striking example of this.

There is, however, still another point of view from which the interactions of the disordered mind and diseased body may be regarded—namely, that of the general physician. To what extent, and in what way, if at all, are the ordinary bodily diseases modified when they occur in persons already suffering from mental disorders? That is the question which this paper attempts to consider.

It is well known that in persons suffering from various mental disorders pain is often absent in the course of those bodily ailments which are usually very painful. This is not due to any self-control on the part of the patients, many of whom give vent to their troubles, real or imagined, with freedom and vigour. Actual bodily pain, due to some local disease, is, however, in my experience, rarely one of them. The result is that in many cases of mental disorder the standards of disease—that is, the particular combination and relative proportion of symptoms and signs—differ so widely from those seen in ordinary practice that the "clinical picture" is, at times, difficult or even impossible to recognize. This is familiar to those who work in a mental hospital, but to those of us who are accustomed to the standards of disease as met with in ordinary practice it causes surprise to see an intracranial tumour without headache, or a pneumonia without pain, cough, or loss of sleep. During recent years, as visiting physician to a large mental hospital, I have seen these anomalous "clinical pictures" repeatedly and in widely different conditions. They may be seen in diseases arising in any part of the body, but they have in common the absence, complete or partial, of important symptoms.

INTRACRANIAL LESIONS

In cases of intracranial tumour the absence of indicative symptoms is a noticeable feature. In the post-mortem room of a general hospital it is unusual to find an intracranial tumour the existence of which has never been suspected during life. At a mental hospital this is by no means so rare. To suppose that this is due to any lack of observation or care on the part of those in charge of the patient would be unfair and unwarranted. The real explanation is that there has been a complete absence of characteristic symptoms and signs. It is difficult to make bricks without straw, and it is impossible for any but a charlatan to make a diagnosis without symptoms or signs. The following are typical cases.

Case 1.—A single woman, aged 35, epileptic and demented, had been an inmate of the institution for several years; she had always been very resistive and difficult. Pulmonary tuberculosis had been suspected, but none had been found. There had never been any change in her mental symptoms, and she had never at any time complained of headache. She began with symptoms of intestinal obstruction on May 31st, 1932, and died suddenly on June 2nd. At necropsy an obstruction by band was found, due to old caseous abdominal glands, and a tumour as big as a walnut in the left temporo-sphenoidal lobe.

Case 2.—A man, aged 63, was admitted on February 9th, 1932; there was no previous history. He was confused, and his gait was a little unsteady, but there was nothing definite about it. Hearing and sight were good and the pupils normal; the blood pressure was raised. The nineteen months that he was an inmate he was practically bed-ridden. No fresh symptoms developed, and there was no headache or vomiting throughout. At necropsy both lateral ventricles were found to be equally and greatly distended, due to an obstruction of the iter by a small angioma arising from its walls. In the absence of any history of this man's illness before admission it is not possible to form an opinion as to when and how the trouble began. It is well recognized, however, that these intraventricular obstructive growths usually give rise to paroxysms of severe headache. The fact that he had none for more than one and a half years before death is noteworthy.

Case 3.—A man, aged 59, was admitted on September 13th, 1933, with a history of confusion for six weeks. His gait was somewhat unsteady and he was shaky, but his speech was clear. There was no paralysis. The pupils were rather small, but equal. Reaction was sluggish. He had no headache and no vomiting throughout. He got up each day and sat about in the sick-room. On October 18th he collapsed suddenly in the afternoon, became more stuporose, and died on October 19th. At the post-mortem examination a tumour of the left frontal pole was found.

Case 4.—A man, aged 58, was admitted on June 26th, 1928, with the history that for three or four months he had had delusions of great wealth, and had had suspicions of his relatives. There was a strong family history of insanity on the father's side. His mental condition remained unchanged during the four years he was an inmate. In July, 1930, his gait became unsteady, and later he had some kind of seizure, in which the right side was affected, and a right hemiparesis resulted. There was no record of headache or vomiting while he was an inmate, and no visual disturbance or cranial nerve palsies. At necropsy, on June 12th, 1932, there was a large tumour at the base of the brain, compressing the right side of the pons. It was so firmly adherent to the base of the skull that its exact relation to the hypophysis could not be made out. In this case such signs as there were would have been of no value in locating the tumour had its existence been suspected.

INTRATHORACIC LESIONS

The clinical picture of intrathoracic lesions in cases of mental disorder is often different from that seen in normal patients. It is a general experience that the duration of pulmonary new growths, reckoned from the first appearance of pulmonary symptoms, is rather long; in other

words, they appear to give rise to symptoms from the first. In the following case no symptoms of illness of any kind occurred until four days before death, and there was no cough throughout.

The patient, a man, aged 68, with senile dementia, had been an inmate since 1925. He had old mitral disease well compensated. There was no change whatever in his mental condition or behaviour until March 14th, 1931, when he was noticed to be short of breath; there was no cough. He was removed to the sick-room and died on March 18th. The post-mortem examination revealed, in addition to the old mitral trouble, a new growth arising in the bronchus and involving the upper lobe of the right lung.

LOBAR PNEUMONIA

It is in lobar pneumonia that the absence of the familiar symptomatology makes such a change in the clinical picture. The signs in the chest, the course of the pyrexia, the P.-R. ratio, and the occasional herpes febrilis are all there, but the pain, the cough, the general distress, and, most of all, the restless, sleepless nights, may be entirely absent. Standing at the bedside of such a patient it is often difficult to believe that he is undergoing an attack of lobar pneumonia. In all of the following cases the patient recovered.

Case 1.—A man, aged 62, who had been an inmate for thirty years, suffering from chronic dementia, was noticed by the attendant to refuse his dinner on February 27th, 1932. He did not complain of anything, but his temperature was found to be raised, and he was removed to the sick-room. Consolidation was found at the right base. The temperature (102° - 105°) during the seven days' illness, with a pseudo-crisis on the fifth and a crisis on the seventh day, were typical. Respirations ranged from 24 to 40, and the pulse from 84 to 112. Leucocytes, 12,000 per c.mm. He had no pain, dyspnoea, cough, sputum, or delirium, and he slept for seven hours every night.

Case 2.—A man, aged 72, with secondary dementia, had slight pain in the left side, slight cough, and a little blood-stained sputum at the onset, but slept five or six hours every night during the one week's fever; he had no delirium.

Case 3.—A man, aged 34, suffering from insanity with epilepsy, had slight headache at the onset, also a little cough, and some rusty sputum, but no dyspnoea. There was no pain in the chest at any time. The fever lasted twelve days, ending by lysis during the last five days. The patient's hours of sleep during the first ten days were: seven, seven, seven, seven, four, six, six, five, six, and six respectively.

Case 4.—A man, aged 59, was admitted in December, 1930, with secondary dementia, following alcoholic mania. In April, 1933, he had lobar pneumonia, right base. He had slight pain on the right side and a slight cough. The crisis occurred on the sixth day. The patient's hours of sleep on the first five nights were: seven, five, six, six, and five respectively. During the pyrexial period he was mentally brighter than usual.

Case 5.—A male, educable imbecile, aged 46, began vomiting on May 1st, 1932. There was no pain or cough, but he was found to be feverish, and he later developed lobar pneumonia. Throughout there was no cough, only slight pain on the right side, and some slight delirium in the early mornings. The fever lasted fourteen days, ending by lysis. His hours of sleep during the fever were: six, six, four, six, six, six, six, six, six, two, four, five, and six.

Case 6.—A male inmate, aged 29, with dementia praecox, usually very deluded, hallucinated, and impulsive, was found to have a temperature of 103° on May 22nd. He had a slight cough with bloody sputa on the fourth day, but no pain. He slept on an average five and a half hours each night of seven days' fever.

Case 7.—A man, aged 36, suffering from general paralysis of the insane (treated with malaria without permanent improvement) developed pneumonia on June 27th. The crisis occurred on July 5th. He had no distress at all, and no cough, sputa, or pain. He slept on an average six hours each night.

In pneumonia, as seen in daily practice, the combination of fever, pain, cough, and loss of sleep usually makes even the most amiable persons fretful and distressed. Indeed, the presence of euphoria is usually of ill omen. The old clinical aphorism "Beware of a pneumonia that smiles at you" contains more than a grain of truth. In these mental cases, however, the absence of distress is not due to poisoning of the higher centres, but apparently to their failure to register and respond to disturbing stimuli from the periphery. The pathological changes in the lung and pleura are the same in character and extent, but they call forth no obvious reaction on the part of the nervous system. The almost complete absence of cough is rather difficult to understand. In ordinary cases it is so frequent, violent, and often painful, that one looks upon it as the imperative reply to an urgent stimulus from within the respiratory tract; in other words, that it belongs to the late F. J. Smith's category "cough useful." Its absence in these cases without detriment to the course of the disease suggests that it is mere waste of energy, and must, however reluctantly, be relegated to his other class "the cough ornamental." The absence of cough and pain no doubt contributes largely to the long, sound sleep, but other psychical factors are probably also concerned. At any rate this steady succession of restful nights must play an important part in preventing exhaustion, and suggests that a free use of effective sedatives may do more good than harm.

In recording these atypical cases of pneumonia it must be understood that from time to time more typical cases occur in persons of unsound mind. In these, cough, pain, and restless insomnia are present. Much depends on the nature of the mental disorder, and the amount of possible reaction of the higher centres. It must also be added that in a certain number of cases of pneumonia diagnosis during life is out of the question. Such cases are those in which the patient presents no symptoms, and is in such a condition of resistive excitement that it is impossible to investigate physical "signs."

Of the other two common thoracic conditions—namely, tuberculosis and cardiovascular disease—I have not, as yet, collected sufficient information to give details. Considering the large number of necropsies in which gross cardiovascular changes are found, the rarity of anginal pain among the inmates is surprising, while in the tuberculosis annexe the comparative absence of coughing is very noticeable.

ABDOMEN

Organic lesions in the abdomen may not give rise to any pain or digestive disturbance. Thus in cases of serious, and even fatal, organic disease of the stomach there may be no discomfort, no vomiting, no tenderness on pressure, no local signs, and, most surprising of all, no loss of appetite.

Case 1.—A male, aged 54, suffering from delusional insanity, was noticed to be getting pale in May, 1933. Secondary anaemia was found. There was no pain after food, no vomiting, and no gastric symptoms. There was nothing palpable in the abdomen. Carcinoma of the stomach was diagnosed from the secondary anaemia. The patient took his food exceedingly well up to his death on September 18th, 1933. The post-mortem examination revealed a cauliflower carcinoma of the stomach with secondary nodules in the liver, left subphrenic abscess, and left empyema.

Case 2.—This man, aged 62, had been an inmate since 1906; he was suffering from secondary dementia following chronic mania. The only gastric symptoms at any time were a slight vomiting of dark fluid on June 26th, 1932, also slight vomiting on July 10th. He took his food well up to the time of his death on July 13th. He denied having any pain throughout his illness, and there was no tenderness or resistance on palpation. At necropsy there was a large malignant mass surrounding and constricting the pyloric opening, with secondary nodules in the liver.

Sometimes there is more definite, though slight, indication of the seat of the trouble; even then the absence of other symptoms may cause hesitation in diagnosis. In each of the following two cases a single slight haematemesis, occurring a week or two before death, was the only diagnostic clue to the seat of the lesion.

Case 3.—A man, aged 63, had been an inmate since 1914, suffering from chronic alcoholic dementia. He had been in bed for the last twelve months. Two weeks before he died there was a slight haematemesis, but he never vomited before or after this. There was no pain after food, and nothing abnormal was to be felt in the abdomen. He died on May 4th, 1933, and, at necropsy, an ulcerating mass the size of an orange was found on the lower curvature of the stomach, with a secondary growth in the liver.

Case 4.—A male, aged 67, suffering from general paralysis of the insane, excitable, aggressive, and elated, in whom malaria treatment had been unsuccessful, was put to bed on March 6th, 1933, on account of weakness. There were no gastric symptoms of any kind until a slight haematemesis occurred two months later, on May 2nd. There was no pain, no tenderness on pressure, and nothing abnormal on palpation. The patient's appetite was good up to his death on June 1st, 1933. The post-mortem examination revealed an ulcerating growth in the lesser curvature of the stomach 3 inches in diameter. The stomach was full of blood; there were also gall-stones and syphilitic aortitis, with infarcts in the spleen.

ULCER OF THE STOMACH

In cases of ulcer of the stomach or duodenum the absence of pain is very misleading.

Case 1.—A man, aged 52, was admitted in May, 1928, suffering from melancholia with auditory hallucinations. He was excited, and stated that he was being tortured with pains all over. This mental condition persisted without any change to the end. On September 3rd, 1931, he was noticed to be looking blue about the face, ears, neck, and feet, and was removed to the sick ward. On September 8th he was taking his food better. I was asked to examine him on September 13th. He had a double aortic murmur and a much hypertrophied left ventricle, otherwise I could find no abnormal physical signs; there was nothing to be felt in the abdomen. He was excited and restless, and kept shouting out about being tortured by pains all over, but there was no particular localization of these to the abdomen, and he had been complaining in exactly the same way for three years. He died suddenly on September 14th. At necropsy there was a calcified aortic valve and a very large heart. The stomach mucosa was much congested. There was one rounded ulcer in the stomach and two in the duodenum, one of which had perforated. There was brown fluid in the inflamed peritoneum.

Case 2.—A female, aged 73, who was suffering from senile dementia and chronic alcoholism; she had always been childish, chattering, and restless. No change was noticed in her appetite or general condition until the day before she died, when she seemed out of sorts and was put to bed. She was extremely resistive to examination of any kind. She collapsed on the bed-pan after a simple enema, and died rather suddenly. At necropsy a perforated duodenal ulcer was found. There was no history of abdominal pain, loss of appetite, or vomiting.

As in the case of carcinoma a haematemesis may prove a valuable clue, but even then the absence of the usual accompanying symptoms makes diagnosis difficult.

Case 3.—A man, aged 52, with recurrent melancholia, had no symptoms until December 26th, 1932, when he had a slight haematemesis and complained of a little abdominal pain. He was put to bed. The next day he vomited half a pint of blood, and on the 28th about 8 ounces. He died on January 1st, 1933. The post-mortem examination showed an ulcer the size of a sixpence near the pylorus. In this case a correct diagnosis was made, and suitable medical treatment carried out. The point is, however, that except for the single occasion mentioned on December 26th, he had no pain throughout.

Case 4.—The patient, a man aged 58, had been an inmate for ten years, and had delusional insanity with auditory

hallucinations. The first sign of illness was on October 24th, 1931, when he vomited and collapsed. In his case a swelling was felt in the left hypochondrium. There is a note that on October 29th his diet was increased, and that there was no vomiting. On November 1st he vomited a little yellow fluid. He died suddenly the following day. At necropsy there was an ulcer on the anterior wall of the stomach the size of a florin, which had perforated. The patient had no pain throughout his illness, and had taken his food as usual up to a week before his death.

Unfortunately, in cases of gastric ulcer in which symptoms are so few, little or no diagnostic help can be obtained from the various aids to diagnosis available in ordinary practice. Many of these require the co-operation of the patient to an extent rarely possible in mental cases. The passing of an ordinary stomach tube is too great a risk to be undertaken, except when necessary for feeding purposes, while a fractional test meal is in most cases out of the question. Similar difficulties attend the giving of an opaque meal for radiological purposes. Examination of the faeces for occult blood presents no such difficulties, but in the very cases in which it would be of value—namely, those of suspected ulcer—the only symptom which, as a rule, arouses suspicion is a haematemesis, and under such circumstances the finding of blood in the faeces does not add to our knowledge. Should an abdominal growth obstruct the bile passages jaundice may occur, and is a valuable diagnostic sign. If it does not, in the absence of all pain and tenderness in the liver region, there may be no suspicion of the presence of a growth.

Case 5.—A female, aged 76, an inmate since 1908 with melancholia, had been bed-ridden since 1927 with pulmonary tuberculosis. For the last two or three months of life she became gradually more feeble, and took less food, but she had no symptoms at any time pointing to liver trouble. There was no jaundice and no pain throughout. At necropsy, on April 2nd, 1931, there was a primary carcinoma of the liver.

The symptom most commonly absent is thus seen to be pain. No doubt the reason for this varies in different forms of mental disorder. In some it may be that there is actual deficiency of available receptive material, somewhat comparable to the temporary effect of narcotic drugs. In others it may be that the receptive material is there, but that it is fully occupied in dealing with other and stronger stimuli. There is also the possibility of a painful stimulus being converted into something not painful, as in Pavlov's experimental dog, in which a painful electric stimulus, when made part of a conditioned reflex for feeding, causes no signs of pain, but merely those of anticipatory pleasure. Whatever the explanation, the question arises: How far does the individual mental patient gain or lose by this absence of symptoms?

To be spared pain in a hopeless, fatal disease is a great boon. When, however, the condition is one in which recovery, either with or without operation, is possible, the absence of pain is a serious loss, because it makes early diagnosis and appropriate treatment impossible. On the other hand, in such a condition as lobar pneumonia the mental patient seems to gain in every way. Whether the mortality of pneumonia is less in mental hospitals than elsewhere I have no data on which to form an opinion. If it is less the gain is considerable; even if it is greater, at least those affected have a smoother crossing.

The frequent absence in these patients of reflex actions, such as coughing and vomiting, when one would expect them to be present, suggest that they are not such simple affairs as they would seem, and that even when their occurrence might reasonably be attributed solely to the lower reflex mechanism concerned with the particular area affected, centres at a higher physiological level play a larger part in the act than is usually supposed.

In conclusion, I would call attention to the work of the nurses and attendants at our large mental institutions. I have been impressed by the quickness and the sureness with which they detect the onset of bodily illness in the inmates under their charge. Usually it is by some very slight change in behaviour or appearance, either not eating their dinner or being less irritable, or perhaps some change in their colour. This is noted and reported at once. Their duties are often exceedingly trying, and if anything goes wrong public sympathy is not usually on their side. It is therefore a pleasure to take this opportunity of stating that those with whom I have come in contact have shown a care and interest in the patients under their charge which is in every way worthy of praise. I am much indebted to members of the medical staff of the South Yorkshire Mental Hospital for help in preparing this paper, especially to Drs. Gillespie and Mathieson for clinical records, and to Dr. Thorpe for pathological notes. For permission to make use of the material and for every assistance in so doing, my thanks are due to Dr. W. J. Vincent, medical superintendent of that institution at the time.

SOME OBSERVATIONS ON ACHLORHYDRIA AND ANAEMIA *

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We define achlorhydria as the condition in which there is an absence of free hydrochloric acid in the gastric juice. Actually we do not often test directly for this acid. Knowing that a certain degree of acidity ($pH\ 3$) can, in practice, only be due to hydrochloric acid, the direct chemical test becomes unnecessary. If no portion of the gastric juice is acid to a certain indicator (that is, red to Töpfer's reagent) no free acid can be titrated: this is achlorhydria in the usually accepted sense, and in this sense is employed here.

TESTING FOR ACHLORHYDRIA

We have at once to recognize that failure to secrete acid on carrying out a test upon the stomach may vary to some extent in the same individual and also with the stimulus to secretion which is employed. By applying a powerful stimulus to gastric secretion we may call forth acid which a milder stimulus may fail to provoke.

An ordinary meal is presumably the most natural physiological stimulus to the secretion of gastric juice, and the earlier tests of gastric secretion made use of 2 oz. of dry toast and 8 oz. of unflavoured tea (Ewald), or 1/2 oz. of boiled rolled oats reduced to a pint (Ewald-Boas). This material, after remaining in the stomach for three-quarters of an hour, was withdrawn and tested. This form of test is still in vogue on the Continent, and many of the older statistics relating to achlorhydria, both here and in America, are based upon it. The principal objection to this test is that all the stomach contents are withdrawn after they have remained in the stomach for, say, three-quarters of an hour, and we learn nothing about secretion after this. In some persons there may be a considerable delay in the production of acid, and it is easily possible that a case which is achlorhydric according to the Ewald test, may not actually be so. The incidence of achlorhydria, using this test, therefore tends to be high.

The fractional test meal, popularized by Rehfuess in America and Bennett and Ryle in this country, and used in this hospital, consists in withdrawing samples of the gruel meal, administered after the fasting juice has been withdrawn, at quarter-hour intervals for three hours. Each sample may be analysed, and a dynamic picture of the fluctuations of gastric

secretion during digestion is obtained. Delayed acid secretion will usually be revealed, and statistics demonstrating the incidence of achlorhydria based on this test show that it is rather less common than the Ewald test would suggest.

Recently the introduction of a powerful stimulant to gastric secretion which can be administered subcutaneously has given considerable impetus to further studies. This drug—histamine—administered in suitable dosage, according to body weight of the individual, causes, within a very few minutes, a copious flow of gastric juice unaccompanied by any other disturbance. The gastric juice so obtained is pure and uncontaminated by food, and is eminently suitable for analysis. Histamine is probably the most powerful stimulant to acid secretion we possess, and when a case fails to secrete acid following the appropriate dose of histamine, it is truly achlorhydric. A proportion of cases achlorhydric in the fractional test meal do produce acid on histamine stimulation.

ITS DISTRIBUTION

The incidence of achlorhydria as shown by these various tests by different workers, for all age periods, is probably about 14 per cent. My own series, collected from patients under Dr. A. F. Hurst at the New Lodge Clinic, is comfortably average (13.7 per cent.).⁶ I think the inference we can draw is that *about 14 per cent. of the average population of all ages is achlorhydric*. Nearly all observers have found that achlorhydria is commoner in females than in males. This was so in my series for all age periods, except between 20 and 40 years. This higher incidence among healthy females is disclosed also when histamine is used. The influence of age has become of considerable importance because of its bearing upon the hereditary, constitutional, and acquired factors which predispose or actually induce achlorhydria and related disturbances in gastric secretion. All types of tests of gastric secretion (including the most recent ones with histamine) show that the incidence of achlorhydria increases with age. This was especially noteworthy in my own series among females beyond the age of 40. Information about achlorhydria in infants is a little uncertain, but beyond the age of infancy we know that the incidence slowly and surely increases. When large series of investigations are put together this increase occurs with a regularity and smoothness which suggests that a true biological fact is revealed.

ITS PATHOLOGY AND SIGNIFICANCE

We have next to consider how, or by what mechanism, achlorhydria develops, and what is its significance. Complete proof does not exist that changes in the mucous membrane of the stomach always and necessarily accompany achlorhydria. The necessary correlations between impaired gastric secretions and the histology of the cells of the mucous membrane of the stomach at all ages have not yet been made. The association of achlorhydria with so many diseases, however, strongly suggests that in a large majority of cases it must have a very definite pathological significance. At the same time we must recognize that its presence may be compatible with apparent normal health, although there are many who believe that achlorhydria always has a serious significance, if not at the moment, then certainly in the future. We cannot ignore the nervous factor. We know that nervous influences, emotional upsets, and psychological factors may play a part in inhibiting gastric secretion. The very emotional upset which may accompany the passing of the stomach tube in a nervous subject may be sufficient to inhibit the acid secretion for a time. In such a patient, employing the older methods, achlorhydria might result according to the first test, and free acid would be obtained

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