

In cases where the loss of consciousness and other urgent symptoms, caused by violent congestion of the cerebral capillaries, continue for twelve, twenty-four or thirty-six hours, or even longer, the application of fresh cups to the neck, and of bladders filled with ice to the head, the use of nauseating remedies and of purgative enemata, must be resorted to. When patients who are thus affected begin to recover consciousness, to make use of their limbs and to resume the exercise of their mental faculties, they ought to be carefully watched, for an outbreak of delirium, more or less complete and difficult to restrain, very frequently succeeds to the symptoms of the comatose period. When we have to contend against such symptoms, which will be rendered still more dangerous by the appearance of evident embarrassment of the power of articulation, we must insist more than ever on the free use of cold applications to the head, of nauseating remedies, of nitrous drinks and irritating enemata. The frequent use of warm baths is also among the means from which the greatest remedy may be derived, during the period of declension of the vascular turgescence of the cerebral capillaries. The rules of hygiene which may be imposed upon patients threatened with an attack of encephalitis, may also diminish the chances of a relapse after the patient has safely passed through the perils of such an attack. This important truth ought never for an instant to be lost sight of by the physician.

TUBERCLE OF THE BRAIN. By JOHN B. CHAPIN, M. D.,
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TUBERCLE of the brain occurs but rarely in the practice of the physician, and is seldom observed, even in hospitals, to any considerable extent by one person. Cases of this disease derive their greatest importance when collated. The appearance of tubercle within the cranium is by no means infrequently met with ; but the frequency with which this affection is seen depends very much upon the facilities of the observer, and the field from which his experience is gath-

ered. In hospitals, especially for children, it is oftener seen than in private practice, and among the poor than with the independent. Many children are born inheriting a scrofulous diathesis, and their life is but the history of a precarious existence. So great is the mortality from tubercular diseases among children, that what are but complications—meningitis and hydrocephalus—have been treated as idiopathic affections. They are essentially diseases of childhood. In a table of the comparative frequency of tuberculous deposit in various organs, of 314 children having tubercular disease, it appeared that 80 had tubercles in the brain and membranes. On the other hand, out of 100 cases occurring in adults, tubercles were found within the cranium, by M. Lombard, in two instances. Dr. J. M. Adams “divides the time it is met with into four periods. Out of 131 cases under 15 years of age, there were 16 under 3 ; 44 from 3 to 5 ; 57 from 6 to 10 ; and 21 from 11 to 15 years. It thus appears that under the age of 3 years, and over that of 10, the disease is comparatively rare.”

Another important fact is true, that tubercular disease in children invades a larger number of organs than in adults. The termination of it, also, is different. The serous membranes are oftener inflamed, and the patient dies from the complication. What is of great satisfaction to the physician, the diagnosis of these cases is not always involved in obscurity.

Dr. Gerhard, in the *American Journal of Medical Sciences*, for 1834, and Dr. P. Kennis Green, in an essay entitled “*Observations on Tubercle of the Brain in Children*,” found in the *Medico-Chirurgical Transactions*, vol. xxv., have written very freely upon the tubercular meningitis of children. Referring to the relation of tubercle to hydrocephalus, Dr. Dendy, in his “*Monograph on the Cerebral Diseases of Children*,” remarks that, “The very frequent discovery of granular tubercle on the pia mater, especially about the base of the brain, in fatal cases of effusion, may constitute the essential tendency to hydrencephalic disorder.” “In the majority of encephalic effusions the prevailing, if not the essential, predisposing cause is strumous or tubercular tendency.” “Not that effusion is the in-

variable consequence of tubercular meningitis, but I have so rarely witnessed fatal effusion without discovering some form or other of tubercle, often, indeed, combined with scrofulous ulcers or cicatrices or tumid glands, that I have been induced to believe it essential to that termination of the disorder we term acute hydrocephalus." M. Andral, in *Lectures on Diseases of the Brain and Nervous System*, states that, "we may lay it down as a rule that tubercles of the nervous centres, at a certain period of existence, produce the disease *acute hydrocephalus*; and it has been clearly established by the researches made at the *Hôpital des Enfants Malades*, that the great majority of children affected with tubercular deposits in the brain or its membranes, are finally cut off by water on the brain."

Tubercle of the brain is not, however, so clearly indicated always as in the cases described by these accurate observers. We will cite some cases—types of the obscure affections with which the physician must sometimes deal—which present themselves with ill-defined and anomalous symptoms. The diagnosis of tubercular disease of the brain, attended as it must be with difficulties, can only be verified after death. It becomes important, therefore, to collect cases, to compare them, and to discover, if we are able, the symptoms that appear more uniformly, which we must accept as our guides. For this purpose we have searched the medical journals, and collected notes of seventy-four cases in which death was ascribed, directly or indirectly, to tubercle of the brain. Twenty-four were under five years of age; twenty-six between five and ten; eight between ten and twenty; six between twenty and thirty; and ten between thirty and eighty. There are three periods over which these cases seem to be nearly equally distributed. Twenty-four were under five years of age; twenty-six between five and ten, and twenty-four between ten and eighty.

The majority of the cases inherited or presented a scrofulous constitution, or that diathesis in which we are accustomed to look for tubercular deposits. In many cases, as we shall see, tubercles were found in organs beside the brain. No single symptom, so far as we can perceive, can be considered pathognomonic of this cerebral affec-

tion. A variety of symptoms, however, do appear, which can be studied;—certain symptoms, indeed, appearing more frequently than others, but all pointing with unerring certainty to disease of the nervous system.

The symptoms of tubercle of the brain most frequently observed, are those involuntary movements of the muscles which may be described as :—

1st. Convulsions with loss of intelligence.

2nd. Convulsive twitchings of muscles, without loss of intelligence.

3rd. Choraic movements of the muscles.

4th. Long continued contraction of the muscles, and paralysis.

It seems important to distinguish, if it can be done, between the convulsions of tubercle of the brain and epilepsy. We incline to believe they differ from those of epilepsy in not recurring with any degree of regularity ; in being less frequent ; in being accompanied or preceded by other symptoms of cerebral or physical disease ; in the absence (almost invariably) of lividity of the face and frothing at the mouth ; by convulsive twitchings, jerkings or contractions of the muscles ; by the presence of symptoms of phthisis or abdominal disease. These points are illustrated by brief extracts from cases which we have compiled.

CASE XII.—Four weeks before death, patient complained of pain in the head, which became at times acute. Six weeks before death, had first attack of convulsions, which recurred several times during a few hours. After this attack the pain in the head increased. There was no recurrence of the convulsions.

CASE V.—Earliest symptom noticed was gradual loss of sight, which commenced three years prior to observation by the physician. There was pain in occipital region. When the case came under observation there was complete amaurosis ; the pupils were dilated. There was much dullness of the intellect ; mind confused ; answers rambling ; utterance slow and heavy. Hearing and other senses perfect. Had three convulsions during the course of the disease, which seemed to extend over a period of three years.

CASE XVIII.—Had been a long time subject to epileptiform convulsions, recurring every month. When patient coughed, a sharp pain at back part of the head was felt. There was a swelling at the lower part of the dorsal region. This patient had a great reluctance to standing for any length of time.

CASE XX.—Complained for several years of violent, continued headache, accompanied with tinnitus aurium, impaired vision, vertigo, and partial confusion of mental faculties. Although the headache was constant, there were darting pains of a more severe nature in the head, rigors, and a constipated state of the bowels. For these symptoms she had the usual routine of practice, blisters, purgatives, &c., with but partial relief. For a few days prior to decease, the symptoms were aggravated; the vertigo was so great she was unable to stand or walk without staggering. Felt great weight in the head, and could with difficulty raise it from pillow. In one of these attempts had a convulsion, which proved fatal.

CASE XXXII.—Fifteen days before admission to hospital, patient had irregular, involuntary movements of left arm and leg, without paralysis or diminution of sensibility. Senses were perfect; intelligence unimpaired; respiration and pulse natural; no abdominal disturbance. Ten weeks after, had two violent epileptiform convulsions, with frothing and livid countenance. Was insensible several days after, and continued failing for two months, when he died.

CASE XXXI.—At the age of seven had a cerebral attack, which manifested itself by a succession of convulsions, delirium and coma. These disappeared in twenty-four hours, followed by amaurosis lasting nine days. For two years after seemed to enjoy good health, but the face was the seat of convulsive movements. Began to complain of some pain in abdomen, with diarrhœa, cough and fever, for which was taken to a hospital. Here the following symptoms were observed. Face was flushed; skin hot; pulse 124; tongue red at the edge and tip; symptoms of severe abdominal affection. No cerebral symptoms observed at this time. Thoracic symptoms supervened, but gradually all appearance of disease disappeared, so that the child was considered able to leave the hospital. In the course

of one month, was suddenly seized with convulsions. Face of natural color; eyelids half open; eyes turned upward, with dilated pupils; irregular movements of the lips; subsultus of tendons of four extremities. In a few minutes all convulsive movements ceased, and death ensued.

Convulsive twitching, contraction of the muscles without loss of intelligence, is a symptom of tubercle of brain of frequent occurrence. It is found in nearly one-third of the cases of this disease. The movement consists of sudden contractions or jerkings of the muscles. It is more frequently confined to one side, and appears, also, in paroxysms lasting two or three hours. It differs from chorea in these respects. The occurrence of convulsions in connection with the muscular movements here noticed, is a symptom of great significance. The symptoms we have just alluded to rarely occur singly, but in connection with other signs of disease; yet they are often the prominent, and seemingly inexplicable ones, and deserve a notice. The following case illustrates the presence of involuntary convulsive action of muscles without loss of intelligence. It presents other important symptoms, which we shall have occasion to notice briefly.

CASE VI.—Female, aged 40, had periodical headache extending from the occiput to the vertex, of 12 years standing. Senses unaffected; intellectual faculties entire, except that the memory seemed at times impaired. There had been pain over the occipital region; vomiting without epigastric tenderness; clean but tremulous tongue; occasionally slight difficulty of deglutition; rigidity of the muscles of the neck, with convulsive twitchings drawing the head to the right side; twitching of muscles of right side of face, extending subsequently to both arms; want of command over lower limbs, with tendency to fall forward.

For upwards of twelve years patient had symptoms like the above. The pulse was perfectly quiet; the headaches were described as usually commencing during the nights, or toward morning, and, when severe, attended with vomiting. No treatment availed to arrest the vomiting. The obstinate vomiting first attracted the attention of

the physicians. The uterine function was not disturbed ; no abdominal tenderness. These symptoms directed attention to the nervous system. No peculiarity of gait was observed, except general caution, and fear of shaking the head. During the progress of the case the headache and vomiting recurred with occasional hiccup, and, now and then, with difficult deglutition. In attempting to walk she staggered like a drunken person, and walked by holding upon a chair. In sitting down it was some time before she was able to steady herself. Convulsive movements occurred at times. These were peculiar. The muscles of the back of neck first became rigid, the head being drawn backward and then twisted to the right side ; then convulsive movements of face on the same side commenced. The convulsive movements were sometimes accompanied by tremor of the whole body.

During the further progress of the case the above symptoms assumed an intermittent character. Patient had a "good day" and a "bad day." The "bad day" she spent in bed, and at other times walked about in an unsteady manner. In attempting to walk out she was seen to roll completely over. Frequently there was a tendency to fall forward, which would have occurred if not prevented. One evening she was found dead sitting in a chair. During the preceding week she had been worse than usual. The convulsive twitchings had extended to both arms. On the morning of her death intelligence was clear, and she expressed a strong conviction that she would not recover.

The involuntary muscular movements which accompany this disease of the brain are at times found to be continuous, and bear the most intimate resemblance to chorea. Cases of this class are not, however, frequent. A case which came under the observation of the writer we shall here present in full.

E——, admitted to New York State Lunatic Asylum, July, 1854 ; male, aged 23 ; single and farmer ; native of New York ; common education ; a member of Methodist Church ; no hereditary tendency to disease. Has been healthy and industrious, fond of reading, and usually sociable in his habits. Patient came voluntarily to the Asy-

lum in company with his physician, who furnished the following history. In March exhibited symptoms of insanity for the first time. He devoted much of his time to religious subjects; became despondent and quite melancholy. At times he would seem very devoted in his religious life. This would occasionally be succeeded by a state of indifference, and he would be profane. He would also be very timid, afraid to be alone, but not disposed to be in company with his friends. He now, at time of admission, has periods of excitement, usually every two or three weeks. He is then noisy, striking, swearing, &c. During the intervals is peaceable, but disposed to wander from home. Is conscious of some mental derangement, but says, not as much as his friends suppose. Appears in his usual bodily health. There had been no particular course of treatment pursued. The patient had, however, been freely bled prior to admission. The attack of insanity is represented by the family physician to have occurred without apparent cause.

Patient was placed upon a quiet hall, and continued there until his death. The paroxysms and profanity were not observed during his residence in the Asylum. His manner was reserved, mild and inoffensive. Replied to questions in monosyllables, and was never known to engage in conversation. Seemed absorbed by his delusions, which were not disclosed. He selected uniformly a particular location in the hall where he was disposed to stand during the day, to such a degree, indeed, that œdema of the feet ensued in consequence. The patient was observed to have a constant twitching or involuntary contraction of the muscles of the face, eyelids, upper extremities and shoulders, closely allied to the characteristic movements of chorea. Beyond the supposition that he was laboring under a mild attack of that disease, these symptoms did not attract unusual attention. The patient continued in very much the condition described until three months before he died, which event occurred on the 7th of May, 1855. During one of the regular visits of the physician, attention was directed to the patient by the discovery of a pulse of great rapidity. The patient had made no complaint of pain, and the attendant had observed nothing unusual in the

case. He was placed in bed. On the following day the friction-sound of pericarditis was observed. During the further progress of the case, diarrhœa and peritoneal tenderness developed themselves, and about two weeks before death symptoms of pneumonia and œdema of the lungs appeared, under which the patient succumbed. From the rational signs, the pulmonary and abdominal symptoms were ascribed to the presence of tubercular deposits; the cardiac disease was, however, involved in much obscurity, as the patient had not been known to suffer from rheumatism.

Post-mortem examination disclosed tubercular deposits of recent date in the lungs, and in the peritoneum which showed signs of inflammatory disease with effusion. The serous membrane lining the pericardium was the basis of *granular tubercular deposits*. There was a thick false membrane, and adhesion between the heart and pericardium to such an extent that a limited portion only was free. Death resulted from pneumonia and œdema of the lungs.

The pia mater was studded with tubercular granulations of recent date, and several yellow tubercles of the size of a pea depended beneath this membrane. At the vertex a tubercular tumor of the size of a chestnut was discovered. It was lodged in the substance of the brain, which was softened immediately about it. In raising the mass it broke from the membrane, to which it was feebly attached. There was effusion beneath the arachnoid and in the ventricles. The vessels were turgid and thickened.

It might almost truly be said of this case that the serous membrane in every portion of the system was the seat of tubercular deposit. We have deemed it important that this case should be recorded in full, not only because it shows how few organs of the human frame, if any, are exempt from this disease, but because two organs in the same individual were involved—the head and the heart—constituting the case one of the most remarkable that we have been able to find on record.

Another condition of the muscular system observed is rigidity of the muscles, permanent flexion or contraction of muscles, as of an arm, leg, or the head, and paralysis. Permanent contraction of the

muscles is not a symptom of frequent occurrence, and its importance as such must be estimated from its connection with other symptoms; as for instance, succeeding or preceding twitching of the muscles, convulsions, etc. Paralysis in some form appears in about one-fifth of all cases, sometimes the earliest indication of this disease, and in other cases appearing later, with other symptoms in connection with acute meningitis. It differs, probably, from the paralysis of apoplexy in the circumstances attending it;—the age of the patient; its gradual appearance; being confined to one limb; and in those non-coordinated movements of muscles resulting in tottering gait, tendency to fall forward, difficult deglutition, &c.

Cephalalgia, a symptom of cerebral tubercle, is next in frequency of occurrence to those convulsive disorders just noticed. It occurs as the earliest symptom of the disease, and later, while the case is under observation, in connection with other symptoms. It is observed in about one-third of all cases of this disease. It is variously described as periodical, dull, acute and lancinating, and neuralgic. When it appears as the earliest symptom, it exists, commonly, a long time before other symptoms appear; as in one case twelve years, and in another one year. In these cases, also, the pain assumes a periodical character, and has been treated with quinine.

Cephalalgia is never, we believe, an isolated symptom, but is the precursor of, or accompanies, other symptoms, and it must derive its chief importance from this circumstance alone. For instance, in one case after pain in the head had existed for several years, convulsion ensued; in another case, amaurosis. In another case it accompanied certain symptoms which clearly indicated the existence of meningitis.

Loss of substance, or disturbance of structure, is the invariable accompaniment of tubercular deposit within the cranium. Notwithstanding the disorganization which sometimes occurs, the mental disturbance is not in proportion to its extent, and occurs in exceptional cases only. This is in accordance with the fact that the brain may suffer loss of substance without visible mental impairment.

The mental affection is of that character which arises from the

presence of a foreign irritating body. No cases of active mental disease, such as we term acute mania, are met with. The prevailing types are those conditions which are called delirium and dementia. Delirium appears in the later stages of the case, presenting the symptoms of, and resulting undoubtedly from, meningeal inflammation, which is excited by the tubercular matter. The symptoms of dementia also appear during the progress of the case. The patient is noticed to wear a stupid expression; to answer questions unintelligibly or incoherently; to have a vacant, expressionless stare; to be irritable, ungovernable or passionate; and often, in the case of children, to change from a condition of activity and sprightliness to that of dullness and stupidity.

These symptoms are never, we believe, found isolated, but occur with other indications which seem to point to organic cerebral disease. One symptom, we observe, was found invariably in the few cases where the mind seemed affected; viz., paralysis, rigidity, or choraic contraction of the muscles was invariably observed.

Amaurosis of one or both eyes, deafness and tinnitus aurium, persistent vomiting, neuralgic pains, are symptoms of great significance. When other symptoms of cerebral disease are present they may almost be reckoned pathognomonic signs of some organic affection of the brain. We may be aided also, frequently, in making a diagnosis of a case of suspected tubercle of the brain, by bearing in mind the fact that in one-third of the cases symptoms of tubercular disease in other organs are present; and that in one-half of the cases tubercles are found on *post-mortem* examination. In those cases where no symptoms of the deposit are observed, and the tubercular matter exists, they are undoubtedly masked by the cerebral affection.

We have endeavored to point out some of the symptoms accompanying tubercles of the brain, and we here recapitulate them in the order of their frequency, viz:

- Convulsions with loss of intelligence.
- Convulsive twitchings of muscles without loss of intelligence.
- Choraic movement of muscles.

Long continued contraction of muscles, and paralysis.
Cephalagia.—Mental impairment.—Amaurosis.—Deafness and
tinnitus aurium.—Vomiting.—Neuralgia.
Scrofulous diathesis.

These symptoms do not occur with any degree of uniformity, or in regular combinations. In the great majority of cases the diagnosis is a matter of difficulty, and at best of conjecture. We have examined a number of recorded cases of cancerous and fibrous tumors of the brain, and find the symptoms analogous to those of the disease under consideration. Should any of the above symptoms, however, appear in connection with a scrofulous constitution, or with signs of tubercular disease elsewhere than in the brain, the case would be a strong one.

The *post-mortem* appearances are too various to admit of classification with reference to the symptoms which manifest themselves, and we shall attempt no more in this connection than to present a very general view of them. The tubercular deposit varies in size from that of a millet seed to that of one half the volume of the cerebellum. It is found more frequently in the serous membranes—the arachnoid and pia mater—oftener, indeed, in the latter than the former. It is said to be common to find tubercles located in the substance of the brain. In all those cases the tubercles undoubtedly had their origin in the pia mater. Observation suggests the belief that tubercles originate, generally, in the structure of the serous membrane, and, in our experience, no attendant pathological appearance is found that may not be explained upon this hypothesis.

During the stage of deposition within the cranium the cerebral circulation is accelerated. In children we observe that activity and precocity which characterizes the disease, and mental excitement in adults, such as was witnessed in the early history of patients whose cases are detailed above. Should the patient survive the meningeal inflammation or effusion which is apt to exist, there may be a period of rest which lasts until the stage of aggregation, softening, &c., commences. The tubercular mass may here become detached from its membranous connection, and be found imbedded in the substance

of the brain. The surrounding cerebral structure may be softened, and purulent matter exist. Cerebral hemorrhage has resulted from progressive ulceration. The nerves may be encroached upon, and their function disturbed or wholly arrested. Neuralgic pains and irregular movements of muscles are thus explained. Tubercular abscesses have discharged through the ear. Cases regarded as otitis have resulted from these abscesses.

Serous effusion is one of the most frequent consequences of tubercular deposit, and hence the remark that "hydrocephalus is universally accompanied with tubercle."

The progress of the disease in the brain is similar to that in other tissues. From its nature it is necessarily fatal. The great amount of disease and disorganization that exists are sometimes unaccompanied by any mental manifestation ; and, on the other hand, a slight pathological change is accompanied by considerable disturbance. To attempt to explain this fact, as well as those cases where loss of brain substance arises from accidental causes, without mental disturbance, we must bear in mind that the lesion is local, and does not necessarily involve derangements of the nutritive and cellular apparatus of the brain, but that when there is disturbance of either of these, from causes however slight, we must expect some disordered mental condition.

SHAKSPEARE'S DELINEATIONS OF MENTAL IMBECILITY AS EXHIBITED IN HIS FOOLS AND CLOWNS.
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We have frequently had occasion to remark that whatever Shakespeare does is always complete in its way, and leaves nothing to be desired. The ass and the fool which he depicts, are ever the ass and the fool *par excellence*, and he has been no less successful in drawing a fantastic and a fop ; for if Bottom, as we have seen, is prince of