On the tubercule of the brain in children / by James Maxwell Adams.

Contributors

Adams, James Maxwell, 1818-1899.
Faculty of Physicians and Surgeons of Glasgow.
University of Glasgow. Library

Publication/Creation

Glasgow : Printed by S. & T. Dunn, 1846.

Persistent URL

https://wellcomecollection.org/works/rkj975dt

Provider

University of Glasgow

License and attribution

This material has been provided by This material has been provided by The University of Glasgow Library. The original may be consulted at The University of Glasgow Library. where the originals may be consulted.
This work has been identified as being free of known restrictions under copyright law, including all related and neighbouring rights and is being made available under the Creative Commons, Public Domain Mark.

You can copy, modify, distribute and perform the work, even for commercial purposes, without asking permission.

wellcome collection

Wellcome Collection
183 Euston Road
London NW1 2BE UK
T +44 (0)20 7611 8722
E library@wellcomecollection.org
https://wellcomecollection.org

ON

TUBERCLE OF THE BRAIN

IN CHILDREN.

BY

JAMES MAXWELL ADAMS, L.R.C.S.E.,

Formerly Senior President of the Hunterian Medical Society, Edinburgh; Honorary Secretary to the Glasgow Medical Society, etc. etc.

SUBMITTED TO THE FACULTY OF PHYSICIANS AND SURGEONS OF GLASGOW, WHEN CANDIDATE FOR ADMISSION INTO THAT BODY, IN CONFORMITY WITH THE REGULATIONS FOR THE ADMISSION OF MEMBERS.

GLASGOW:
PRINTED BY S. & T. DUNN, 48, BUCHANAN STREET.

MDCCCXLVI.

TO

P. D. HANDYSIDE, ESQ. M.D. F.R.S.E.

LECTURER ON ANATOMY AND PHYSIOLOGY, EDINBURGH; CONSULTING SURGEON TO THE EDINBURGH ROYAL INFIRMARY, ETC.

My Dear Sir,

In inscribing the accompanying Essay to you, I mean, in a public manner, to mark my high estimate of your position as an erudite Pathologist, and successful Teacher of Anatomy and Practical Surgery; to express the respect I entertain for your private character; and to thank you for many tokens of disinterested friendship.

I am, my Dear Sir,

Very sincerely yours,

JAMES MAXWELL ADAMS.

ON

TUBERCLE OF THE BRAIN IN CHILDREN.

A FEW years ago, I met with several cases of cerebral disease in children, which were quite new to me, and they consequently attracted much of my attention. A reference to most systematic works failed to afford me any satisfactory information, and I then became impressed with a conviction, which subsequent experience has confirmed, that the symptoms and consequences of tubercle of the brain in children, have not, especially in this country, met with the consideration they deserve. I have, therefore, chosen the subject as suitable for a probationary essay, and I hope that, by concentrating in a brief monograph what is already known upon the subject, I may invite attention to a branch of pathology, which my own limited experience would fail to illustrate satisfactorily.

The greater number of cerebral tumours belong, according to Otto's observations,* to tubercles, which, in their softened condition, are often brought forward in old writings under the name of 'cerebral abscess.' Tubercles are most frequently met with in children, and they are not confined to any particular structure, situation, or organ, but of the three great cavities, they are of rarest occurrence within the cranial, although met with there sufficiently often to prove their presence by no means uncommon. This is shown by the fact, that of 1324 patients admitted, with acute disease, into the Children's Hospital at Paris, during the years 1833 and 1834, 26 had tubercles in the brain; being a proportion of one to 57.† In adults, on the contrary, tubercle of the brain is so exceedingly rare, that many eminent pathologists have not met

* Lehrbuch der Patholog. Anatom. Berlin, 1830, bd. 1. s, 433.

† Dr. H. Green, Medico-Chirurgical Transactions, vol. xxv. p. 198.

with a single example. Their frequent occurrence in children is a matter of great practical importance, as they give rise to symptoms very embarrassing to the medical man who is called to combat the disease.

These symptoms are so very like those of hydrocephalus, and it is, moreover, so frequently accompanied with an effusion of watery fluid within the cranium, that it is more than probable much of the discrepancy of opinion upon the subject of hydrocephalus, its causes, curability, and treatment is owing to the want of a clear perception of the various structural lesions to which the brain is liable. The history of tubercle of the brain in children gives support to this opinion, for nearly all the scattered cases to which I have found reference have been treated *secundem artem*, for hydrocephalus, or there has been an absence of such diagnosis as could lead to anything like rational practice. A more accurate and extensive acquaintance with the various causes which give rise to watery effusion within the cranium cannot but lead to a more precise diagnosis, and more consistent and satisfactory modes of treatment.

In using the term tubercle of the brain, I do not include tubercles of the meninges, *i. e.* the small hard cartilaginiform granulations found upon the coverings of the brain, and which cause the *tubercular meningitis* or *arachnitis* of French writers.

There is little to be met with in the writings of British pathologists, having reference to tubercle of the brain in children, and with one exception,* I am not aware of any systematic work upon diseases of children in any language in which it is more than casually mentioned. Several interesting papers, more or less complete, besides records of scattered cases, show, however, that its existence has been recognised. These have been published at different periods, mostly by foreign writers, and in foreign journals. Indeed, it is chiefly to our continental brethren, and to the observations collected in the Parisian hospitals, that we are indebted for the greater part of the information we possess upon the subject. The descriptions given by these writers coincide so nearly, that it is some-

* Rilliet et Barthez, Traitè Clinique et Pratique, des Maladies des Enfans, Paris, 1843.

what extraordinary it has not claimed a separate chapter in some of those works which profess to give a complete synopsis of infantile diseases.

Although any seeming discrepancy in the accounts given by the writers to whom I have just referred, may be ascribed to the circumstance of their observations having been made at different stages of the malady, I will, to avoid misconception, enumerate briefly the most striking of the symptoms, reserving for after consideration the more minute details.

A child of a few years old, of a scrofulous habit or tendency, is affected for several weeks or months with headache of an intermitting character, often accompanied with vomiting or nervous tremors. These are followed by a sense of debility and disinclination for motion, or ordinary sports and exercises. Epileptic seizures, convulsions, or strabismus, may also be present. Gradually the disposition of the child alters, and he appears fretful, retired, and melancholy. The appetite becomes depraved, or entirely fails, the bowels constipated, and the body attenuated. The face acquires a peculiar pallid, anxious expression. As the disorder advances, these symptoms, at first partial and intermitting, increase in frequency and severity, and at length are permanent; when after several days of complete or partial stupor, the child dies, comatose or convulsed.

After death, there will be found in some part of the brain, one or more masses of tuberculous deposit, varying from the size of a millet-seed to that of a walnut, and occasionally even larger. A softened or otherwise altered condition of the surrounding cerebral substance will probably be present, and not unfrequently an abnormal effusion of watery fluid into the arachnoid cavity, within the ventricles, or at the base of the brain. Almost invariably there will also be found tuberculous deposits in other organs of the body, and chiefly in those of the chest and abdomen.

The following case illustrates some of those points:—

'January 23, 1843. John Young, aged four years, light hair, blue eyes, and fair complexion, of ordinary fulness of body, has had several strumous disorders.

'About three months ago, without any known cause or previous indisposition, he fell suddenly on the floor, and remained a short time insensible. Shortly afterwards he complained of severe pain in the head, which has been violent, with few intervals, ever since. He walks with difficulty, and totters in his gait, catching at objects for support. His appetite is much impaired; his bowels constipated, requiring frequent purgatives. He has become listless, drowsy, peevish, and melancholy. At this stage of the disease, I was called to visit him.

'In his present condition, his eyes are suffused, and there is knitting of the eyebrows, but there is no intolerance of light; his pulse is quick, feeble, and irregular; his tongue smooth and covered with a brown fur. He has no desire for food, and he frequently vomits his meals, at which period his headache is greatly increased.

'Jan 27. He has got into a semi-comatose or drowsy condition, from which he can with difficulty be roused to recognise persons and objects. He lies mostly on his left side, with his eyelids partly open, the left eyelids being wider apart than the right. His pulse continues quick and feeble. The left leg and arm are paralysed; the pupil of the left eye is dilated, that of the right contracted.

'Jan. 29. The left arm and leg are constantly employed in an up-and-down movement; and on laying hold of the arm some force is required to bend it at the elbow. The eyebrows are knit, and both pupils are contracted and insensible to stimuli. The conjunctivæ are deeply injected. He moans occasionally, and raises his right hand to his forehead. He inclines always to lie upon his left side. There is a peculiar half sucking, half biting, and lateral movement of the lower jaw.

'Jan. 31. Died last night at 10 P.M. Twenty hours before death both pupils became dilated and remained in that state, and he could not be afterwards roused to any token of recognition.

'*Inspection.* Feb. 1. The sagittal and coronal sutures were very moveable, and at the vertex of the cranium there was a marked thinning and translucency of the bone. The cerebral membranes were much congested. The upper surface

of the arachnoid was dry and of a waxy appearance, and there was slight subarachnoid effusion. A tubercle, the size of a large bean, was found imbedded in the cortical substance of the left cerebral hemisphere. It was enclosed in a cyst, from which it was turned out entire. The medullary substance surrounding the tubercle was, for several lines in depth, softened, and of a reddish tinge. When the cyst was slowly stripped away, its exterior surface was seen red and tomentose from small thready fibres passing between it and the substance of the brain. About three ounces of fluid was found at the base of the brain, and the membranes in that situation were thickened and infiltrated with semi-gelatinous serum. The lateral ventricles contained four ounces of clear fluid. The membranes covering the corpus striatum of left side were opaque, thickened, and tough, from effusion of lymph, so that they could be stripped off in a layer with the dissecting forceps. The brain showed numerous bloody points when cut across.

'Old adhesions of the left pleura existed. The bronchial glands were enlarged, and some of them contained tuberculous deposit. The lungs were studded with miliary tubercles.

'Numerous tubercular granulations were found beneath both the parietal and visceral portions of the peritoneum. The mesenteric glands were enlarged, and many of them nearly displaced by tuberculous deposit, which, in several instances, had proceeded to softening. Where this softening existed the gland was surrounded with a ring of inflammatory congestion.'

In this case there was a train of well-marked symptoms, which held on their course apparently unaffected by any treatment. The disease of the mesenteric glands, was very evident, but the ultimate issue, and the symptoms immediately preceding, were clearly owing to the structural lesion of the brain. The disease occurred in a very scrofulous habit. The father of the patient died within a fortnight afterwards of phthisis, and the only surviving child of the family has since been repeatedly under my care for various strumous disorders.

When tubercle of the brain is complicated with other affections, the practitioner is apt to be exceedingly embarrassed. The following is an interesting example:—

'March 5, 1843. Agnes Inglis, eight years of age; hair and eyes dark; skin clear, thin, and transparent: general health said to be good: remarkably intelligent. Her mother died of phthisis shortly after child-bearing.

'Four weeks ago there appeared, on several parts of her body, a number of small tumours, which have gradually and steadily enlarged. When they reach the size of a hazel-nut, they approach the surface of the skin, which then becomes thin and red. She has been complaining of pain in the left side of the head; and, during the last few days, has had occasional nervous tremors, principally affecting the left leg. As a coincidence, her father remarks that the first tumour appeared upon the left leg. She has become low-spirited, her appetite is impaired, and her general health is in a declining state. At this period she came under my care.

'On examining the tumours, it was very evident they contained fluid. They amounted to about sixty in number, and varied from the smallest perceptible elevation of the skin to the size of half a walnut. The integument covering them did not differ from the surrounding skin, except in a few instances, where it was on the point of giving way by ulcerative absorption, and at these places it was of a deep purple colour. These tumours occupied the head, trunk, and extremities. There was no perceptible enlargement of the glands of the neck, or other parts of the body, nor had she ever been affected with any disorder of a marked character, other than the ordinary complaints incident to childhood. The tongue was red at the tip and margins, and spotted in the centre; the pulse normal; the bowels regular.

'Her father informed me that she was very fond of her books, was anxious to excel at school, and that she had of late undergone an unusual amount of mental labour, part of which consisted in committing to memory a great many verses of poetry.

'March 22. Much improved; pain of head entirely gone; the nervous tremors have nearly altogether disappeared. The boils are, nevertheless, as numerous as before; for while some are disappearing, there are others coming forward. That which

was first observed on the left leg, and another which is situated in the palm of the hand, have given way, and discharged some pale, thin, curdy pus. A foul ulcer remains on the leg, an inch in diameter, having irregular edges, and an inflamed base; a pale and flabby surface, and scanty dark-coloured granulations.

'April 2. Some of the boils have entirely disappeared, while others are remaining stationary. The nervous tremors are recurring in frequency, and during their continuance, the vision of the left eye is greatly impaired; the pupil is dilated, and there are fiery spectra. The pulse continues normal. Head to be shaved and sponged occasionally with warm vinegar.

'April 8. The number of boils at present is thirty-two. Since last report she has been affected with cough; but a careful examination with the stethescope elicited nothing positive as to the existence of organic disease in the chest. The cough is now entirely gone. Her general condition is much the same as at last report, save that to-day she has been seized with troublesome vomiting, and several large masses of coagulated milk have been ejected.

'April 14. The boils are rapidly disappearing, and only three or four now remain. The nervous tremors are less violent, but more frequent. The pain of head has returned, and is principally seated in the forehead. She asks often for cold drinks, and has occasional attacks of retching and vomiting. Her appetite has entirely failed, her strength is declining fast, and to-day, for the first time, she has betaken herself to bed.

'April 16. Consultation with Dr J. A. Laurie. The pain of head is increasing, and has become very acute. There is slight incoherence, double vision, occasional retching and tenesmus. The pulse is good, the bowels regular, and the dejections natural.

'April 19. No improvement. Has pain of back and arms; no sleep; great restlessness and jactitation; pulse 120, and strong; bowels constipated; has passed no water since yesterday.

'April 21. Much worse. Constant restlessness and low moaning; eyes suffused and red; pupils dilated, and little sensible to stimulus of light; pain of head continues severe; pulse small and frequent; rambles in speech incoherently, but when spoken to answers correctly.

'April 24. Consultation with Dr Laurie. Much weaker.

'April 27. Has daily become weaker. Is continually moving and tossing the right arm and leg. In other respects, her condition is the same as on the 21st. She died this morning at 11 a.m.

'*Inspection*, April 29. The integuments on hind part of head, where first blister was applied, were thickened, and adhered firmly to the cranium. A boil or abscess, found in the scalp, was examined; there was no cyst enclosing it. The cranium, a little behind the coronal suture, was elevated, thinned out, and markedly translucent; the sutures moveable; the arachnoid was dry and glazed. About twenty tubercles, varying from the size of a pea to that of a hazel-nut, were scattered through the cortical substance of the cerebrum, chiefly on the left side; they were of a pale yellow colour, of the consistence of hard butter, and they all seemed to be enveloped in a thin cyst. The brain was very soft, and gave way on the slightest pressure. The lateral ventricles contained about ten ounces of serosity. A quantity of albuminous lymph was effused over the pons Varolii, and at the top of the medulla oblongata.

'The lungs were thickly studded with miliary tubercles. Numerous miliary tubercles were scattered over the surface of the liver and spleen. The mesenteric glands, the stomach, and intestines were healthy.

'The treatment consisted in the use of quinine, with occasional doses of mercury and chalk, with rhubarb—the warm bath and warm clothing—the administration of turpentine, to expel any probable cause of irritation in the bowels—afterwards cod-liver oil, hydriodate of potash, shaving of the head, blisters over scalp, leeches behind ears,' &c.

In this case, much difficulty was experienced in forming a positive opinion or determined line of treatment. The universal prevalence of the scrofulous boils, conjoined with the normal condition of the pulse, and certain other functions, suggested a general constitutional disorder, not likely to be benefited by any lowering course of treatment; while, on the other hand, the headache and nervous tremors pointed to a local affection, in all probability of a severe and dangerous character. The

thinned and elevated state of the cranium, which was so apparent on inspection, gave probable evidence that an effusion had taken place at a period and to an extent not previously suspected. A suspicion was at one time entertained that there was an abscess in the brain, but no reference could be found to any analogous case. I have little doubt that the development of the cerebral disease was in a great measure influenced by the undue application of the patient to her studies.

The two foregoing examples affords a tolerably fair outline of the principal morbid phenomena to which tubercle of the brain may give rise ; but a predominance of one or more symptoms is often found.

Thus an acute form of the disease is occasionally met with, having a rapid course, and the symptoms of which are so closely assimilated to those of acute hydrocephalus that they alone will hardly furnish sufficient data for a correct diagnosis. There are few practitioners who are in the habit of verifying their opinions and practice by necroscopic observations, who cannot recal to their remembrance cases of ' acute hydrocephalus,' where inspection after death showed the presence of tubercles in the brain, but which were regarded at the time as a mere evidence of an unhealthy constitution or anomalous coincidence, and not as having any especial connection with the disease for which the patient had been treated. Such cases generally terminate fatally, within a period of a fortnight or three weeks, and the symptoms accord pretty nearly with the following description :—

During a state of ordinary health, and after some evident exciting cause, as a blow or fall, or more frequently when convalescing from some infantile disorder, a child is suddenly seized with convulsions, headache, or vomiting, followed often by paralysis of the lower limbs, or one side of body. The pulse becomes quick, and the child is feverish ; various lesions of the organs of sense supervene, as strabismus, loss of sight, of hearing, or diminished sensibility of the cutaneous surface of one side of the body ; the bowels are commonly constipated, and the appetite fails ; the intelligence meanwhile remains good. The

child continues in this condition for a period varying from a few hours to a fortnight, and seldom longer than three weeks, and death finally ensues, attended with coma or convulsions.

As I believe that a detail of cases tends to impress the characters of a disease more strongly on the mind, I will record a few examples:—

I extract a case related by M. Tonnellè.*

'Marie Victoire Aubert, three years of age, of a fair complexion; pale, meagre, and languishing from her birth; presented a melancholy picture of most scrofulous diseases, as tinea, cold abscesses, swellings of the glands of the neck, opthalmia, and chronic diarrhœa. She was seized in the beginning of September, 1827, with convulsions and fever.

'On the 7th, when she entered the hospital, the left side of her body was paralysed and almost insensible. The arm of the same side was, moreover, rigid and affected with convulsive movements, which recurred many times during the day; considerable heat and fever were conjoined with these symptoms. Eight leeches were applied behind the ears.

'On the following days there was occasionally noticed a brisk agitation with acute cries; sometimes prostration and drowsiness; from time to time convulsive movements in the eyes and lips; and there was constant strabismus.

'On the 15th the breathing was stertorous; the jaws were firmly closed; there was inability to swallow; and the mouth was covered with foam.

'She died after a short agony.

'*Inspection.* We found in the left lobe of the cerebellum a rounded tubercle of the size of a walnut, of a yellow colour, and considerable firmness. There was neither injection nor softening surrounding this deposit. In the right optic thalamus, and in the middle lobe of the corresponding hemisphere, there were found two tubercles, each the size of a hazel-nut. The surrounding cerebral substance was of pultaceous softness and brightly injected. In the centre of the softened parts we found many large bloody clots, hard, resistant, and as if combined with the nervous pulp. A spoonful of turbid serosity was found

* Journal Hebdomadaire de Medicine, vol. iv. p. 585. Paris: 1829.

in the ventricles, and there was considerable injection and some puriform striæ in the pia mater.

'In the chest and abdomen, but especially in the latter, we found a large number of tubercles, to the tendency of which we will afterwards allude.

'In this case the largest tubercle existed in the cerebellum; and here, especially, this product had caused no alteration, and consequently no symptoms. The other tubercles, which were of lesser size, had, on the contrary, caused an intense inflammation, with softening of the brain and meningitis, together with the other symptoms observed in our patient. But this last affection was much greater than in the preceding observations. The difference depended mainly upon the effusion of serosity, which in this instance was in trifling quantity. Neither had we observed any dilatation of the pupils, nor the coma, and deep prostration, which were present in the other cases. The dominant symptoms, viz.: paralysis, contractions, partial convulsive movements of the face, trismus, and strabismus, were all indicative of cerebral softening.

'This alteration, then, was easy to recognise. As to the tubercle it could not be predicted otherwise than from the age, the constitution of the child, and also the nature of the disease. Its existence, nevertheless, had not escaped the sagacity of M. Jadelot, as the treatment was not very active.'

The concluding observations of M. Tonnellè, touch upon a point of prime importance in the history of this disease, viz.: the strong bearing which the constitution of the patient has upon the diagnosis. The following cases will make this appear still more evident:—

The first is related by Dr Watson of King's College, London.* 'I attended recently with Dr Latham, a youth, whose symptoms led us to believe that he had tuberculous disease of the peritoneum. We thought it probable also, although there were no *physical* signs of pulmonary disease, that his lungs contained crude tubercles. After some time he went down to the coast, and was there attacked with a fit of general convulsions. Up to that period he had shown no symptoms whatever indicative of organic disease within the head. On being

* Lectures on the Principles and Practice of Physic, vol. i. p. 409. London: 1843.

apprized of this seizure, we expressed in a letter to the physician then attending him our opinion, that it had resulted from the presence of scrofulous tumours in the patient's brain. The convulsions returned a few days afterwards, and he died. It was as we had conjectured. The peritoneum was found studded with innumerable miliary tubercles; there were a few crude tubercles of some size around the roots of the lungs; and two large masses of the same sort in the brain. Here you see we were directed to a correct special diagnosis of the cerebral disease, simply by the evidence which had satisfied us that scrofulous tubercles existed in other parts of the body.'

The next two cases occurred in the practice of my esteemed friend Dr A. Menzies. The notes of the appearances on dissection, observed in the first example, were taken by myself during the inspection.

'Feb. 19, 1844. John Ross, four years of age, was for the last four months affected with strumous disease of the carpal bones of both hands. Four weeks ago he underwent a mild attack of measles, for which no medical treatment was required. About a fortnight afterwards he became feverish and fretful, and at this date I was called to visit him. His principal symptoms are pain in the head, dilated pupils, loss of vision, pulse frequent and irregular, sleep short and broken with screams: his hearing is perfect, and he has complete consciousness.

'Feb. 26. Consciousness much impaired.

'Feb. 27. Consciousness nearly extinguished.

'Feb. 28. Insensibility complete.

'Feb. 29. Moribund—died at 20 minutes to 4 P.M.

'*Inspection.* The arachnoid was dry and glazed, nearly three ounces of muddy serum were found at base of brain. From the olfactory bulbs, and especially over and around the optic commissure, to the medulla oblongata, the membranes were very vascular, and thickened from effusion of opaque white lymph, and numerous red vessels passed from the membranes to the brain. On the inferior surface of the left hemisphere of the cerebellum, there was found an irregularly rounded tuberculous mass, of the size of a large walnut, softened and of a curdy consistence, like wet plaster of Paris. This product was

contained in a thick cyst, the inner wall of which grated on being touched with the scalpel, and so tough, that by pulling it was easily removed entire. The cyst, which seemed to be formed of condensed cellular tissue, had a considerable number of small vessels ramifying on its outer surface. Another tubercle of nearly equal size lay in immediate contact with the first, but penetrated deeper into the substance of the brain. Its contents were of a hard and cheesy consistence. The brain immediately surrounding the tubercles was softened, but showed no alteration of colour. A clot of blood was found in the right ventricle, and both ventricles together contained about four ounces of serum.

Several miliary tubercles were found in the upper lobe of the left lung, and the upper lobe of the right was bound down by old adhesions.

'The spleen adhered firmly to the diaphragm, and contained a small tubercle.'

Here it was evident, from the large size and other conditions of the tubercles, that they must have existed in the brain for a considerable time, although there had been no symptom to attract attention, until within a comparatively recent period. The debility consequent upon measles, occurring in an unhealthy constitution, had evidently favoured the onset and rapid progress of the cerebral disease.

On taking into consideration the strumous diathesis, as evinced by the affection of the carpal bones, as well as the general appearance of the patient; also the presence of strumous disorders in other members of the same family, we were able to prognose with much confidence the nature and termination of the disease.

'March 31, 1843. David Edgar, four years of age, was first visited at this date, when a strumous abscess on the hand, of some months' duration, was opened. No other symptom of disease was then apparent. He was again seen, April 17, when he complained of headache, with slight febrile symptoms.

'April 22. Increased headache and fever.

'April 26. Headache continues, and with greater severity.

'April 27. Headache continues, and the pupils are dilated.

'April 28 and 29. Consultation with Dr Macfarlane; case considered one of "acute hydrocephalus." The sensibility has been gradually becoming less, and is now nearly extinguished.

'May 1. Died at 4 P.M.

'*Inspection:* Some effusion in ventricles of brain. Numerous tubercles of a yellowish colour, and the size of peas, scattered through the cortical substance of the brain.

'Miliary tubercles in great number were found in the chest and abdomen.'

On comparing the cases I have detailed, with an equal number of well observed cases of *hydrocephalus*, uncomplicated with tubercles, many will, I believe, be satisfied that the presence of the latter in the brain may often be inferred with considerable accuracy. In some of the scattered observations to which I have made reference, the writers express a fear that the irregularity of the symptoms attendant upon tubercle of the brain, constitutes an almost insurmountable difficulty in the diagnosis. These opinions are, I believe, caused chiefly by the limited number of cases reviewed, or from their early history being unknown or overlooked; and to the same cause, as I have before remarked, may be ascribed much of the minor discrepancies which are found in their accounts of the disease. But this will appear more obvious when we have examined the symptoms in detail. I have endeavoured, by reference to a number of my medical friends, to procure many cases of this affection, in the hope that, by having more accurate details of their history than is found in the majority of these published, I might be enabled to make some more positive inferences than I have ventured to do; but I regret that, with two or three exceptions, all the information I have received from this channel is so vague, and derived from so hazy a recollection, that I have been unable to make any satisfactory use of it.

The next page gives an analytical view of 171 cases of tubercle of the brain in children. From the absence of many details, the analysis is necessarily very incomplete, but I have thought its introduction of use, as presenting at one view the principal authorities I have consulted, and the prominent facts with regard to sex, symptoms, &c.

TABLE OF CASES OF TUBERCLE OF THE BRAIN IN CHILDREN.

AUTHORITY.	No. of Cases.	Sex. M.	Sex. F.	PROMINENT SYMPTOMS.	REMARKS AND REFERENCES.
Gerhard	32	15	17	Headache, Vomiting, Paralysis, Contractions, Constipation.	Of two exceptions—one had Gangrenous Cavities of Lungs—the other was not examined fully.
H. Green	30	14	16	Headache, Convulsions, Epilepsy, Paralysis, Amaurosis.	
Tonnelle	12	7	5	Convulsions, Epilepsy, Headache, Vomiting.	Of two exceptions—in one the other Organs were healthy—the other is not detailed.
Rilliet and Barthez	12	8	4	Convulsions, Headache, Paralysis, Contraction of Muscles.	
Abercrombie	7	4	2	Headache, Paralysis.	In five cases, the condition of other Organs is not stated.
Behier	7			Of Meningitis in four—the other three died of Phthisis.	*Bulletins de La Societe Anatomique*, 1837.
J. Adams	6	2	4	Headache, Nervous Tremors, Paralysis, Vomiting.	In two cases, the other organs were not examined—all were of well marked Scrofulus Diathesis.
Cless	5			Of acute Hydrocephalus in four cases.	Ages of Patients ranged from eight months to eleven years.—*Gazette Medicale de Paris*, Jan. 1845.
Bredow	5				*Med. Zeitung*, Dec. 8, 1842. Other ages not stated.
Becquerel	5			No particulars given other than that they died of Meningitis.	One exception.—*Recherch. Clinique sur le Meningite des Enfans*, Paris, 1838, p. 29, *et seq.*
F. Schweninger	4			Of Head Affection.	Not seen by Dr S. during life.—*Brit. and For. Med. Review*, vol. xii. p. 229.
Romberg	4			Headache—Symptoms of Head Affection.	
Burnet	3	1	2	Headache, Paralysis, Contractions, loss of Sensation.	*Journal Hebdomadaire de Medicine*, t. v. 1829, p. 439.
Moncrieff	3	3		Headache, 'Symptoms of acute Hydrocephalus.'	In one case, other Organs not examined.—*A. Monro's Anat. of the Brain*, Edin., 1827, p. 50.
Kellie	3	3		Headache, Convulsions, Vomiting, Fever.	In one case, the other Organs were sound.—*A. Monro, op. cit.* p. 177.
Guibert	3	3		Headache, Convulsions, Intermitting Fever.	Tubercular deposit was in layers.—*Rev. Med. Franc. et Etrang.* vol. i., 1828, p. 347.
Ford	2	1	1	Headache, Paralysis, Strabismus, Fever.	Condition of other Organs not stated.—*London Medical Journal*, vol. ii., 1790, p. 56.
Swarsberg	2	1	1		No particulars.
Bright	2		2	Paralysis, Strabismus, Headache.	*Abercrombie, op. cit.*, and *London Medical Gazette*, 1830, p. 96.
A. Menzies	2	2		Headache, Amaurosis, Stupor, and Coma.	*Communicated.*
J. Bell	2		2	Headache, Nervous Tremors, Vomiting.	In one case, other Organs not examined.—*Communicated.*
H. Lonsdale	1		1	Of Acute Hydrocephalus.	Condition of other Organs not stated—supervened upon a chronic strumous affection.—*Communicated.*
Alison	1	1		Headache, Vomiting, Coma.	*Trans. of Medico-Chirurgical Society of Edinburgh*, vol. i., 1824, p. 419.
A. Monro	1				*Monro's Anat. op. cit.*, p. 48.
Audral	1			Constant Motion of Head, Paralysis.	*Abercrombie, op. cit.*, p. 445. Condition of other Organs not stated.
Bouillaud	1	1		Headache, Hemiplexia, Nervous Tremors.	Do. p. 448. Do.
Beilby	1		1	Headache, Convulsions, Paralysis, Peculiarity of Speech.	Do. p. 81. Do.
Begbie	1	1		Low Fever, Amaurosis, Strabismus.	Do. p. 147. Do.
Gregory	1	1		Headache, Amaurosis, Strabismus, Paralysis.	Do. p. 172. Do.
Hay	1		1	Headache, Strabismus, Convulsions.	Do. p. 439. Do.
Coindet	1	1		Headache, Convulsions, Paralysis.	*Sur l' Hydrencephale*, p. 106. Do.
Suringer	1		1	Headache, Paralysis.	Other Organs sound, described as a scrofulous girl.—*Brit. and Foreign Med. Rev.*, vol. xiii.
Merat	1	1			Condition of other Organs not stated, described as a scrofulous boy.—*Journ. de Med.*, vol. x. and xiv.
Dufour	1		1	Headache, Vomiting.	Other Organs sound.—*Propositions sur Quelques cases, &c.*, Paris, 1828.
Dunn	1	1		Change of Temper, Headache, Paralysis, Nervous Tremors.	Condition of other Organs not stated.—*Medico-Chirurg. Transact.*, vol. xxv. p. 209.
Bertin	1	1		Headache, Vomiting, Amaurosis, Convulsions.	*Edinburgh Journal of Medical Science*, 1827, p. 207.
	1		1	Headache, Vomiting, Drowsiness, Paralysis.	*Reports from Hopital des Enfans, in Lond. Med. and Surg. Journal*, vol. v., 1834, p. 670.
	1	1		Headache, Imperfect Speech, Paralysis.	Do. Do. Do.
Snow	1			Headache, Vomiting, Contractions.	*Lancet*, 1839, p. 504, a doubtful case, described as 'a white substance, hard as wax, continuous with brain.'
Post	1		1	Convulsions and Coma.	Fatal in thirty hours.—*New York Medical Journal*, No. I., 1839.
Bainbridge	1		2	Headache, Convulsions, Contractions, Amaurosis.	*Lancet*, 1839, p. 128; do., 1842, p. 659—a case of 'Infiltrated Tubercle.'
	171	73	64		

In this Table it is to be understood that in every case when not otherwise specified as exceptions, there were Tubercles found in other Organs besides the Brain.
Reference is only made to those authorities who are not quoted in the body of the Essay.

With regard to the predisposing causes of the disorder every observer is agreed. The disease is essentially scrofulous, *i. e.* dependant upon tuberculous cahexia, 'that particular morbid condition of the system which gives rise to the deposition of tuberculous matter, on the application of certain exciting causes, which have no such effect on a healthy system.'* Indeed we have almost reached that period when the term scrofulous and tuberculous may be used synonymously; for all accurate observations go to prove that it is upon the presence, in some form or other, of that peculiar product, called *tubercle*, that all maladies, termed scrofulous, depend.

Dr Abercrombie states, that tubercle of the brain 'occurs in persons and in families, in whom a tendency to tubercular disease has otherwise manifested itself, and they are often combined with tubercular disease in other organs.'† Gerhard found that 'in every case analysed, there was evidence of the existence of tubercles in one or more organs.'‡ And Dr H. Green says that 'in no instance was the affection confined to the brain. Tubercles or tubercular deposit were invariably found at the same time, either in the thoracic or abdominal cavities.'§

The frequent co-existence of tubercles in other organs of the body, when found in the brain is shown in analysing the table,—

Tubercles were found in other organs of the body in - -	110 cases.
Tubercles stated to have been found only in the brain - -	4 cases.
Other organs not examined, or their condition not mentioned -	57 cases.

And, taken in another point of view, it is farther shown from a table given by Messrs Rilliet and Barthez,‖ that in 312 tuberculous or scrofulous children, there were found tubercles in the brain in 37 cases, or rather more than one in nine.

From these results it appears that in children there will seldom

* Dr Clark on Consumption and Scrofula. London, 1835, p. 12.

† Pathological and Practical Researches on Diseases of the Brain and Spinal Cord. 3d edition, p. 163. Edinburgh, 1834.

‡ Medico-Chirurgical Transactions, vol. 25, p. 201.

§ American Journal of Medical Sciences, vol. xiv. p. 1834.

‖ Op. cit. vol. iii. p. 48.

be found tubercle in the brain without its co-existence in other organs; and from an attentive consideration of all the cases I have seen or made reference to, I am satisfied that in the great majority of instances, this tuberculous diathesis was *very apparent* during life, either as evinced in their own persons, or in that of other members of the same family.

The presence of a tuberculous constitution is, therefore, the most important element in aiding the diagnosis.

To show the age at which the disease is most frequently met, I have divided the cases of which the ages are given into four periods,—

From 0 to 3 years, there were	16 cases.
From 3 to 5 years	44 cases.
From 6 to 10 years	57 cases.
From 11 to 15 years	21 cases.

It thus appears, that under the age of 3 years and above that of 10 years, the disease is comparatively rare; while from 3 to 10 years, it is of most frequent occurrence—the two periods mentioned giving respectively 37 and 101 cases.

The collective ages of these 131 patients gives an average of rather more than $6\frac{1}{2}$ years, and about this age, which corresponds with the commencement of the second dentition, it will be found that the majority of cases occur.

Sex seems to exert but little influence; for by reference to the large table, it appears that the proportion of both sexes is pretty nearly balanced. Thus of 137 patients, 73 were males and 64 females, a preponderance certainly of the former, but accounted for in a great measure by the constant preponderance of the male sex at an early age.

The individual symptoms may now be considered. Their severity, it may be first remarked, is not in proportion to the amount of tuberculous deposit, nor does the existence of tubercle necessarily infer the appearance of symptoms to indicate its presence. For tubercles may remain latent in the brain for a very considerable period, and give rise to no suspicion of cerebral disorder. This is proved by the fact, that tubercles are sometimes found in the brains of children who have died of other diseases, as phthisis or measles. But such instances

are uncommon, and any disturbance of the balance of health is exceedingly apt to bring into action, the irritation and subsequent fatal train of symptoms of which tubercle is the predisposing cause.

In almost every case where the symptoms have been noted with any degree of accuracy, headache was present both at the outset of the complaint and during its course, and it always formed an important feature of each case. The pain is felt in various degrees of intensity, but is usually described as violent and of a tearing or lancinating character. It comes on in sudden paroxysms, which have an intermitting tendency, although it is often more or less present during the whole progress of the case. Sometimes it is the only symptom for a considerable period, and gradually becomes associated with the others. Sometimes it disappears entirely for days, or even weeks, as in Inglis's case (p. 10), and returns towards the termination of the disease. The seat of pain varies, but it is chiefly in the forehead. Sometimes it is felt at the back of the head, the temples, around the ears, or at the base of the brain. Its situation corresponds not unfrequently with the existence or greater development of the disease near that part. The headache is often associated with vomiting, which symptom does not appear to be altogether dependent on mere sympathetic irritation, for Gerhard* states, that in about three-fourths of the cases observed by him, there was found 'unequivocal lesions of the mucous membrane of the stomach.' And it is a fact sufficiently familiar, that a congested or inflamed condition of the stomach frequently co-exists with cerebral diseases.

The headache is greatly aggravated by vomiting, or by any sudden or irregular movements of the head; and this fact is considered important by some. Dr Romberg† leans much weight on it as aiding materially to form our diagnosis. He attributes this increase of pain to the circumstance, that 'in each inspiration, when it is strong and prolonged, the brain is elevated, the cerebellum is then pressed against the tentorium,

* Op. cit.

† Wochenschrift für die ges. Heilk; No. 3, 1834.

and the brain against the skull;' and he goes on to observe, that 'cries, the accession of cough and vomiting, have the same influence.' It is also worthy of being kept in mind, that the headaches of children are for the most part sympathetic, and are commonly relieved by sickness and vomiting, more especially if, at the same time, the bowels are properly emptied by an active purgative.

To the presence, and especially to the character of headache, I am therefore disposed to attach considerable importance as constituting a trustworthy symptom.

Convulsions are observed next in order of frequency. They are often accompanied, or quickly followed by nervous tremors, contractions or rigidity of certain muscles, weakness of the limbs, almost amounting to paralysis, strabismus, and other lesions of the motor powers. They commonly occur more than once, but several days, or even months may elapse before their repetition. Their duration varies from a few minutes to several hours. M. Gendrin* has sought to establish a connection between the seat of the convulsions and the part of the brain where the disease exists. But an attentive consideration of the facts supposed to favour this view has satisfied me that the correspondence is not so uniform as to justify a practical inference; for sometimes, where the convulsions are general, tubercles are found only on one side of the brain, while unilateral convulsions are often associated with tubercles scattered throughout both sides of the brain.

It is affirmed, with certain reservations, by Drs Rilliet and Barthez, that in proportion to the frequency and violence of the convulsion is the quantity of serum found in the ventricles of the brain; and I think that the facts are sufficient to bear them fully out in this opinion.

Contractions or increased rigidity of the muscles is most frequent in the upper extremities, and generally of one side, although not confined exclusively to either. M. Leveillè† has observed, that the posterior muscles of the neck are oftenest

* Recherches sur les tubercles, du cerebrum, et de la moelle epin; Annales du cercle medicale; fevrier 1823.

† Rech. sur les tuberc, du cerv. Thesè, 1824.

affected. This condition is generally persistent, but of varying intensity, being sometimes so slight as to be readily mistaken for voluntary resistance of the muscles, caused by giving annoyance to the child. It is therefore necessary to make a careful comparison of both sides of the body. Sometimes, however, the contraction of the muscles is so marked that the limbs remain in a state of flexion, which can only be overcome by a strong effort. Gerhard remarks, that in five cases out of twelve, in which there was little or none of muscular contractions, the quantity of serosity which was found in the cranium was very great; and he infers, that a great secretion of serum coincides with the absence of muscular contractions observed in the large majority of cases.

Paralysis and epilepsy are of most frequent occurrence in the chronic form of the disease. There is seldom a complete loss of muscular power, the paralysis rather being limited to a weakness or comparative loss of power, as evinced by feebleness or unsteadiness of the lower limbs, a slow and hesitating step, or even inability to walk, while a certain power of voluntary movement almost always remains. The paralysis is commonly associated or ushered in with attacks of epilepsy which occur at various intervals, but the paralysis generally is persistent, especially when the limbs are affected by it.

Where the loss of power is limited to one side of the body, it co-exists, according to M. Rilliet and Barthez, with tubercle of the opposite side; and paralysis of the lower limbs coincides ordinarily with the development of tubercles in the cerebellum. I have not found sufficient data to determine positively upon these statements, but they are very probable and entirely in accordance with our pre-conceived notions.

The intelligence of the child is seldom affected in a very marked degree, and many cases proceed to within a few days or even hours of their termination, and the powers of the mind are little or at all obscured. A change of temper or disposition is, however, of very common occurrence, and the patient is observed to become listless, melancholy, and petulant, although as an early symptom this is not so remarkable. Change of temper is also observed in acute hydrocephalus, but

there is a difference in degree, being more decided in the latter, and oftener accompanied with high delirium or incoherence, a condition which, when present in tubercle, is seldom observed until towards the termination of the case.

According to M. Bouillaud, who is followed in this by several observers, a disturbance or loss of the faculty of speech is influenced, in a special manner, by tumours existing in the anterior lobes of the brain; and he refers to cases in corroboration. So far as this goes, there may be adduced cases to support the system of localisation, but others could as certainly be quoted directly at variance, and as strongly disproving the supposed connection.

The senses, especially that of hearing, are at first more acute, but they become obtuse as the disease advances. Occasionally there is loss of vision, independent of any evidence of effusion upon the brain—amaurosis in fact, more or less complete. The pupils are often dilated, especially towards the end, and strabismus at some period exists in most cases.

The pulse varies greatly, so much so, that I am at a loss to state what is its usual condition. According to my own experience, it is natural, or even abnormally slow at first, and gradually increases in frequency as the disease advances, so that from 70 or 90, it reaches as high as 140 or 160 a few days preceding death.

The breathing is commonly slow and irregular, accompanied with sighs, and during sleep with moans; towards the termination it becomes frequent and stertorous.

A constipated state of the bowels, requiring the use of purgatives, is very common, but towards the close the dejections are often passed involuntarily.

The appearance of the countenance is worthy of note. Dr Gerhard informs us 'it is so peculiar, that the sister of one of the wards, at the Children's Hospital, was accustomed to distinguish the disease with much accuracy, from the mere aspect of the child. The face is pale, with occasional flushes of redness on one or both cheeks; mouth frequently a little deviated; lips compressed, or half open; the eyelids are almost invariably closed, or a little separated; nostrils widely dilated. But the

most distinctive character is the peculiar listless expression, with occasional grimaces and movements of the lips, as if tasting an article of food; this character does not admit of description, it must be seen to be appreciated.'

The *morbid appearances* found after death are not uniformly alike, but differ in form and in degree.

Tubercles are found in the brain in three distinct forms: *First*, Isolated and in rounded portions, from the size of a millet-seed to that of masses five inches in thickness. *Second*, As a layer of tuberculous matter, situated between the membranes and external cineritious substance of the brain, commonly following the direction of the sulci, and modelled on the external surface of the brain. *Third*, Infiltrated in the substance of the organ.

The first is by far the most common. Sometimes there is only a single one present, but, in general, more than one is found. When single, they are commonly of large size, and a mass has been found nearly displacing a whole hemisphere of the brain.* When in great number they are of small size. Professor Reil† found upwards of two hundred in one case. They were of the size of a lentile or pea, and situated altogether in the cortical substance. In one case, of which I have preserved but imperfect notes, there were found upwards of one hundred, varying from the size of a millet-seed to that of a kidney bean, scattered over and imbedded in the cortical structure of the brain.

The second variety is uncommon. The best recorded example is related by Mr Dunn. The diseased appearances are described by Dr Todd, of King's College, London: 'On the surface of the right hemisphere of the brain, under both the arachnoid and pia mater, there was a deposit of tubercular matter in patches of irregular shape and size, but the whole occupying a surface of about two inches square. The deposit was most abundant on the surface of the convolutions; it nevertheless descended into the sulci between them, a circumstance which proved its connection with the deep surface of

* Andral.

† J. C. Reil, Memorabilia Chir. vol. vii. fasc. 1. No. 2. 1792.

the pia mater. The cortical substance of the brain, in contact with the tubercular matter, was reddened and greatly softened, and on microscopic examination, evinced a nearly total destruction of the tubules in it, a great enlargement of the proper globules of the grey matter, and of the pigment granules which adhere to them. The softening extended a slight way into the subjacent white matter. On the edge of the left hemisphere, corresponding to the diseased patch of the right, a slight tubercular deposit had taken place, in a similar manner producing a red softening of the grey matter in contact, but not occupying more than half an inch square in surface.' *

The third variety is exceedingly rare. One case is related by Dr Murdoch:† 'A child died in January, 1830, in the ward of M. Jadelot, at the *Hôpital des Enfans*. The body was opened by M. Blandin, *interne* brother of the professor. A perpendicular section of the pons Varolii exhibited a striking similitude to a sliced carrot or radish, the strata of nervous parenchyma and tuberculous matter being alternately arranged in concentric layers.'

The second and third varieties occur so seldom that I shall devote no farther time to their consideration. All of the cases coming under my own notice, and nearly all I have found recorded, belong to the first description. Their increased bulk is generally caused by the agglutination of a number of the miliary points. In most instances, a 'vascular cyst'‡ of variable thickness envelopes the tubercle, and separates it from the adjacent medullary tissue. This cyst varies from a thin transparent membrane to a covering of the density of fibro-cartilage. Where the strumous deposit is of long standing, or has proceeded to softening, the cyst is of greater density, and is readier recognised. The most common change a tubercle undergoes, is that of softening, and this process, according to Andral, Carswell, and others, commences on the exterior. It is difficult to conceive how it could be otherwise, as is asserted by Lænnec, and some other pathologists of note, if we bear in mind that it

* Medico-Chirurgical Transactions, vol. xxv. p. 216.

† London Medical Gazette, 1832, p. 843.

‡ Craigie's General and Pathological Anatomy. Edinburgh, 1828, p. 459.

is a morbid compound, not susceptible of organisation, and, therefore, incapable of undergoing any change that is not induced on it by external agents. Dr Carswell states that the softening is caused by the 'admixture of serosity, pus, blood, &c., which have been effused, or secreted by the tissues subjected to its irritating influence. The pus and serosity pervade the substance of the tuberculous matter, and detach it.'* A tubercle which has undergone this process to a considerable extent, presents much the appearance of an abscess, and many of the so-called *abscesses of the brain*, it has been shown, are the remains of tubercles altered by the change just described. Another change sometimes observed is called the cretaceous formation. This appearance depends upon the removal of the watery portion and part of its animal constituents, thus acquiring an excess of its earthy particles.

But in whatever condition it is deposited, tubercle is a body foreign to the structure in which it is found, and liable, from various exciting causes, to act as a local irritant, causing periodic congestions and consequent functional disorders. At length it gives rise to inflammation of the brain, or of its membranes. The former becomes red and vascular, softens, and is often converted into a lardaceous or pulpy consistence, having a slight yellow or greenish colour. This alteration is best seen in immediate contact with the tubercle. The membranes of the brain become vascular and pour out serum, or are thickened and rendered opaque by effusion of lymph, but often they present no change.

M. Gendrin† is of opinion that it is rupture of the cyst of the tubercle which determines the actual disease or inflammation, softening, &c.; but this opinion is far from being supported by general observation, reason, or analogy.

The effusion of serum, which is so frequently found within the cranium, is variable in quantity, and though it influences the symptoms, is far from being a necessary concomitant of the disease. There are various opinions as to the cause of the effusion—some believing it the result of inflammation communi-

* Cyc. Pract. Med., vol. iv. *Art. Tub.*

† Op. cit.

cated to the membranes from the brain, others considering it as passive and dependent on anemia, or deficient nervous power, while it has been suggested that obstruction to the lymphatics passing over the tumours and thickened membranes may prove the probable cause. M. Barrier* relates two cases where he believes that tubercular masses in the cerebellum caused pressure upon the straight sinus; and he thinks that obstruction to the return of the blood, through the sinus, may have been the cause of the local dropsy. Upon these conflicting opinions I will not presume to determine, although it seems reasonable to ascribe a share to each and all of the causes assigned.

Much has been done in the way of investigating the cause or origin of tubercle, but the field is still open for additional researches. According to Broussais, Alison, Louis, and others, *Tubercle* is of inflammatory origin, while it is held by a still greater number of authorities, as by Lænnec, Lobstein, Bayle, and Gendrin—that if inflammation be present, it is the effect, and not the cause. The observations of Dr Carswell† upon this subject are so reasonable and philosophical, that I am tempted to quote them. He claims, what every person with a mind unbiased by previous theory, will be ready to admit, viz., that inflammation, whatever may have been its degree or duration, or whatever may have been the tissue effected, is not necessarily followed by the formation of tuberculous matter, or any product of a similar nature. He then affirms, what all observations support, 'that the products of inflammation are always the same, under conditions of a similar kind.' He concludes that coagulable lymph or pus are the *natural products* of inflammation, and that, 'were the conditions under which this pathological state takes place always the same, its products would be so also. Hence it follows, that when other products than these make their appearance in inflammation, the legitimate conclusion is, that some other morbid condition besides inflammation is present, to which *morbid condition* alone must be owing the essential and distinctive character of such products.'

* Gazette Medicale de Paris, No. 17, 1840.

† Op. cit.

I come now to a point which by some will be considered of more immediate practical importance, viz., the diagnosis of Tubercle in the Brain. Here the difficulties to be encountered are unquestionably very great. It is, I think, M. Guersent who terms the morbid affections of the brain and its membranes *la bouteille a l'encre*. For some symptoms are common to most cerebral diseases, while others, which are supposed to be essential to individual disorders, are often wanting. But in like manner we find symptoms which are common to chest diseases of totally different character, and but a few years have gone by since the essential differences and symptoms of Pneumonia and Bronchitis were established and properly appreciated by the profession. We have certainly not the same physical facilities for examining diseases of the brain, but even here our knowledge has of late years been greatly extended, and, with multiplied observations, it is not unreasonable to expect ultimately an equal precision of diagnosis.

The affections with which, in the order of chances, tubercle of the brain may be confounded, are acute and chronic hydrocephalus, cerebriform tumours of the brain, hydatids, arachnoidean hemorrhage, and hypertrophy of the brain. Now, the symptoms to which each and all of these may give rise are so associated and so much alike, that it would be exceedingly difficult to classify them with anything like precision, yet there are circumstances in the history of the patient, and also of these different affections, which increase or lessen the probabilities of their existence, and these should be considered in detail as the cases present themselves. To some of them I will allude shortly.

Thus, chronic hydrocephalus is rare after the age of three years, while it is mostly after that period that the hydrocephalus of tubercle is observed. True epiliptic seizures, or amaurosis, independent of general insensibility, so frequent in tubercle, are, I believe, rarely noticed in uncomplicated hydrocephalus, either chronic or acute, but mostly in connection with tumours or growths within the cranium.

Cancerous tumours of the brain cause symptoms so analogous to tubercle, that it would be affectation to draw a marked

line between them. There are, however, several circumstances in relation to the pathology of cancer, which cannot be passed over without comment. Hitherto it has been generally supposed that a close connection subsists between cancerous and tuberculous deposit, but Dr Walshe, who has devoted more attention to the subject of cancer than any other observer, has proved that this opinion is so entirely erroneous, that there is, on the contrary, a marked antagonism between them. He has shown, indeed, that they rarely, if ever, co-exist. From his researches it also appears that cerebral cancer is of very unfrequent occurrence in early life, but that it becomes more common with advancing age; for of fifty-six cases of cerebral cancer occurring in individuals up to eighty years of age, there were found only five instances under the age of ten years.* It will be recollected that cerebral tubercle occurs in an inverse ratio; consequently, when there is evidence of the presence of a cerebral tumour co-existing with a scrofulous diathesis, the chances of its being cancerous are reduced almost to zero.

Tubercle of the brain, it must be well borne in mind, is seldom found but in a well-marked scrofulous constitution. The early symptoms are apt to escape detection, from the long interval which separates one symptom from another; and also from the circumstance that the patient is seldom brought under the notice of the medical man until after what might almost be termed the latter stages of the malady; and even at this period, the relatives seldom think of directing his attention to peculiarities which had been to their apprehension of so evanescent a character as to require no comment, or to have no direct bearing upon the case.

It is, therefore, from a knowledge of the frequent occurrence of tubercle of the brain in children, from the presence of a strumous diathesis, from the irregularity of certain well-marked cerebral symptoms, and the irregular intervals which separate one symptom from another, that the diagnosis of this affection mainly depends. An attack of epilepsy may not be succeeded by any appreciable sign of ill health for several months or a year. But if in a child so affected, and which besides gives

* Walshe on Cancer. London, 1846, p. 491.

evidence of a scrofulous diathesis, there should occur headache, vomiting, nervous tremors, paralysis, amaurosis, change of temper, &c., each or all of these symptoms. If they follow a variable course, having intervals, exacerbations, and accesses of fever, in the manner I have previously described, we have then every reason to believe that the child has tubercle in the brain.

With regard to treatment, I have nothing to say. The complaint appears to have been invariably fatal, and the treatment hitherto employed seems not even to have afforded the poor satisfaction of mitigating symptoms. In the way of prevention there is greater encouragement for the medical man, for he can adopt such means in strumous families, as are likely to strengthen the general health, and so counteract the tendency to so fatal a malady.

GLASGOW:
PRINTED BY S. AND T. DUNN,
48, Buchanan Street.