three cases at all events, it was possible to manipulate freely with silk ligatures, and yet introduce them in a sufficiently pure state to produce no suppuration of any kind; and all this with only the simplest precautions as to absolute cleanliness, and without the carbolic spray. There is also a satisfaction in knowing that the veins are thoroughly occluded, and that there is no possibility of the ligatures slipping or being too soon absorbed, as might be the case with catgut. If nothing else, the operation appears an interesting experiment, and worthy of further trial.

Harley-street, W.

CASE OF STRUMOUS ULCERATION OF THE INTESTINES, PRESENTING THE CLINICAL FEATURES OF ACUTE GENERAL TUBERCULOSIS.

By SAMUEL WEST, M.B., &c.,

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DR. STURGES remarks in his article on Acute Tuberculosis in THE LANCET of September 16th, that "tubercular individuals, children at all events, will present the clinical symptoms of tubercular meningitis, and die in the usual way, but post mortem neither tubercle nor inflammatory exudation will be discovered." The following case is an illustration of this.

On August 17th a child, nine years of age, was brought to the Chest Hospital, Victoria-park, by its mother, who stated that though never strong, the child had been in its usual health until the last six weeks, when it became weak and languid; that for the last fourteen days it had been feverish, and had suffered from pain and sickness chiefly after food, and a little diarrhoea. There was no history of any previous illness. The child was thin and feverish, looked dull, and had an aspect which suggested typhoid fever. The pulse was rapid, 100-120; the temperature was high, with marked evening rise, 101.5° to 102.5°, the morning temperature being nearly normal. The child was listless, heavy, and slept much. The condition remained the same for some days. Diarrhoea, spots, and abdominal pain were absent, and the abdomen retracted. At the right apex the percussion was slightly impaired. The respiratory sounds were increased, especially the expiration sound, which was remarkably long and harsh, accompanied by occasional fine crepitation. The absence of abdominal symptoms and the presence of pulmonary signs led to the probable diagnosis of acute general tuberculosis, which was confirmed, it was thought, by the further course of the case. For the apex dulness increased slightly, some general bronchitis set in, and the patient rapidly lost flesh and strength; on the 6th of September—i.e., at the end of the fifth week of severe illness, and nine weeks from the commencement of failing health, the child, having for some days previously grown more and more drowsy, became suddenly unconscious, the eyes remaining wide open, the pupils equally dilated and not responding to light. There were continual slight twitchings of the feet and hands with irregular movement of the eyeballs; the respiration was noisy and harsh; the urine and faeces were passed unconsciously. For the next two days the temperature rose higher than usual, above 103°, the general condition remaining the same. On September 9th the temperature began gradually to fall, the twitching ceased, the pupils were observed to dilate and contract spontaneously, as in many cases of meningitis, and several loose motions were passed in bed unconsciously. On the 10th there was a slight return of twitching in the eyelids and arms, the respiration became embarrassed, and in the evening the patient died.

The history of the case, the retraction of the abdomen, the absence of diarrhoea, the presence of lung symptoms, and their gradual increase, and, lastly, the occurrence of unconsciousness, with slight convulsions, were all thought to point conclusively to the diagnosis of acute general tuberculosis. This diagnosis, however, the post-mortem examination did not establish. In no organ was there the slightest trace of grey tubercle. The apex of the right lung was indurated by some old pigmented fibrous tissue, but there was no recent mischief. The brain was absolutely

healthy, except for the presence of a small cyst (a quarter of an inch in diameter) in the middle of the nucleus. This cyst had a firm fibrous capsule, with smooth lining, and round it the nerve substance was perfectly healthy; so that there was no sufficient explanation in the presence of the cyst for the sudden occurrence of unconsciousness. All the other organs were sound, except the intestines, which were in a most extreme condition of "tubercular" ulceration. In the whole caecum round the valve, and for the lower six inches of the ileum, the mucous membrane was completely ulcerated away, and at frequent intervals in the small intestines large tubercular ulcers were found, many completely encircling the gut. The last ulcer, and that too of considerable size, was at a distance of only two feet from the duodenum; the character of the ulceration was typical of the so-called tubercular or strumous ulcers of the intestine, and the glands of the mesentery were also in the condition usual in this affection.

The uncertainty of diagnosis between many cases of acute general tuberculosis and typhoid fever is generally recognised, but this case is an instance of an intestinal lesion, not typhoid, which presented the same difficulties.

Wimpole street, W.

PURULENT DISEASE OF THE EAR;

PRODUCING CEREBRAL ABSCESS, PURULENT MENINGITIS, AND OBLITERATION OF THE RIGHT LATERAL SINUS, WITH STRIKING CHANGES IN THE INTERIOR OF THE TEMPORAL BONE.¹

By THOS. BARR, M.D., F.F.P.S. GLAS.,

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W. C—, a boilermaker, aged thirty-seven years, was a remarkably strong man, of great muscular development and of medium height, weighing in ordinary health between fourteen and fifteen stones. He suffered from purulent disease of the right ear from the age of twelve till his death—that is, for twenty-five years. There was almost total deafness on the affected side. The disease was supposed to have originated in the blow of a cane received on the right side of the head, and inflicted by a schoolmaster by way of chastisement. This injury was followed by great pain, continuing for several weeks and culminating in the formation of an abscess which was opened behind the auricle. About the same time a discharge of matter appeared from the external auditory canal. The purulent discharge from the opening behind the ear continued, with variations in quantity, till six years ago, when the opening closed, leaving behind a depressed cicatrix. The discharge from the canal of the ear, which had usually an offensive odour, continued, with slight intermissions, till the patient's death. It was slighter, however, during the nine months before his fatal illness. He was liable during cold weather to attacks of hoarseness with sore-throat. At the age of seventeen he suffered from acute inflammatory attacks in the right ear, when it was supposed that his life was in danger. He noticed that when the discharge ceased for a short time he suffered from severe headache, and became very dull and fretful. Indulgence in alcoholic stimulants produced the same effects, and he was therefore very temperate in their use. In the middle of November last there began a series of morbid processes—first in the left ear, then in the right,—which in the course of three months terminated fatally by extension of the purulent inflammatory process to the interior of the cranium. The left ear, which previously had been always healthy, and in which he enjoyed good hearing, became at that time dull and discharged slightly without any distinct pain. This was associated at the beginning with sore-throat and hoarseness. The dulness and slight discharge in the left ear continued for two months, at the end of which an acute inflammatory process began in the ear. While at work on Monday, Jan. 23rd of this year, and particularly on his way home at the end of the day, he experienced great giddiness, so that at times he staggered in walking. On the following morning at four o'clock he awoke with severe pain in the head, with great giddiness, and he looked

¹ I am indebted to my friend Dr. McConville, the medical attendant of this patient, for the chief facts given in the clinical history.

deadly pale. Dr. McConville was sent for in the forenoon, when he found the patient "suffering from great pain on both sides of the head, but chiefly on the left side. The left auricle projected abnormally from the side of the head, and the meatus was almost closed by swelling of its walls. There was a general feeling of uneasiness and tenderness in the temporal and mastoid regions. The cervical glands immediately behind the lobule were much swollen and painful." The deafness on the left side was now almost as complete as on the right, and only the shrill voice of a female friend exerted at its highest pitch close to the left ear could be heard by the patient. Dr. McConville then, for the first time, examined the right ear. He found over the upper part of the mastoid region, a little distance behind and above the auricle, a depressed cicatrix adhering to the subjacent bone. The canal of the ear was filled with pus, and on its removal by syringing with warm water a few granulations were seen at the inner end of the canal. There was some bronchitis and pharyngeal catarrh, along with febrile disturbance and thickly coated tongue.

The treatment carried out by Dr. McConville consisted in the local abstraction of blood by leeches applied in front of and below the left auricle, in the use of poppyhead fomentations and hot linseed-meal poultices to both sides of the head, and in the use of a gargle of chlorate of potash. The general treatment included catharsis by jalap and calomel, followed by the use of a mixture containing iodide of potassium, chloride of ammonia, and an anodyne for the cough. After a few days a large cantharides plaster was applied to the back of the head, from ear to ear, with apparently considerable relief to the pain and the giddiness. The man's condition seemed to improve. After a few days the painful symptoms passed off, and the hearing was partially regained in the left ear. This improvement continued, exciting lively hopes of recovery, which were, however, changed to bitter disappointment, for in the course of another week grave and ominous symptoms appeared.

On Saturday evening, twelve days after the first attack of giddiness, the patient experienced a sense of chilliness; pain was complained of, not on the left, but on the right side, the seat of the old purulent disease. Dr. McConville then ordered forty grains of bromide of potassium and ten grains of chloral to be taken night and morning. The next morning the man felt so well that he proposed to take a walk in the West-end park; but to this the doctor distinctly objected as a possibly dangerous exposure to cold. That evening he had another chill. From this day the symptoms became most grave, and indicated serious mischief in the interior of the cranium. The pain in the head—chiefly in the front—became daily more intense. Nights were passed in agony, which anodynes, externally and internally applied, only partially mitigated. The patient was seized with repeated rigors. In these rigors the arms and legs shook violently. These rigors or shakings soon took the character of epileptiform convulsions.

I was asked by Dr. McConville to see the patient on Wednesday, Feb. 15th, seven days before his death. The man then lay in a stupor, but was capable of being roused; there was extreme deafness, loud shouting into the left ear being necessary before he heard and understood. I asked him about the pain in the head. He answered, slowly prolonging the word, "excruciating." I found no tenderness in the right ear, or in its neighbourhood. The orifice behind the ear was now open, and fluid injected into the opening passed quickly and freely through the canal of the ear. The current could also be forced as easily in the opposite direction. Disinfecting fluids were afterwards regularly and frequently forced through the ear by this means. It was apparent, however, that the mischief was in the interior of the cranium, and a cerebral abscess was diagnosed. Up till four days of his death he was able at times to get out of bed, and even to walk from the room to the kitchen. Four days before death he was seized with paralysis of the left arm and leg and right side of the face. For two days before death he was quite comatose. He died on the evening of Wednesday, February the 22nd, about a month after he left his work and sixteen days after the more definite brain symptoms set in.

The autopsy was made by Dr. James Alexander Adams, twenty-four hours after death. Under the calvaria the veins of the dura mater were seen to be torpid. On clipping away the exposed dura mater the middle part of the upper surface of the right cerebral hemisphere presented a slightly bulging appearance, but the surfaces of the hemi-

spheres appeared to be otherwise normal. At this stage of the examination no unusual odour was apparent from the intra-cranial contents, but while removing the brain from the base of the skull, when the right temporal lobe was raised from the middle fossa of the skull an extremely disagreeable fetid odour was suddenly experienced. A small quantity of purulent matter was at the same time seen on the floor of the middle fossa of the right side. The brain being placed with its base upwards, the lower surface of the right temporal lobe corresponding with the upper surface of the petrous part of the temporal bone was seen to be dark in colour and very soft to the touch, but having no apertures in its substance. On cutting into the temporal lobe at this part, however, a thin brownish fluid, emitting a most offensive smell, poured out in considerable quantity; and on making further sections, the lateral ventricle and a great part of the interior of the right cerebral hemisphere seemed to be occupied by this fluid. There was no distinct boundary wall or membrane enclosing this collection of fluid, but the substance of the brain around seemed in a softened, at some parts even gangrenous, condition. The temporal bones were removed for careful examination. Right temporal bone: The dura mater covering the upper surface of the petrous part of the bone was swollen, soft, and pulpy, and was perforated by two small apertures. The portion of dura mater covering the roof of the antrum mastoideum was more thickened than elsewhere. The bone beneath was dark coloured and eroded; at one part it was perforated by a considerable carious opening communicat-

FIG. 1.

The outer part of the section of the right temporal bone. *a*, Outer part of the dilated antrum mastoideum, showing the three openings communicating with the external auditory canal, and one communicating with the interior of the cranium. *b*, The dense compact tissue into which the mastoid cells are converted. *c*, Section of inner end of external auditory canal. *d*, Inner end of canal passing to the outer surface of the mastoid process. *e*, Dura mater.

ing with the antrum mastoideum. After a time the colour of the bone changed, and instead of being dark, it assumed a bleached and white appearance. Behind, the dura mater covering the concavity for the lateral sinus, and forming the walls of that sinus, was extremely thickened and converted into a fleshy mass. The lumen of the lateral sinus was completely obliterated by thickening of its walls and by fibrous adhesions of its inner coats. Some purulent matter was found infiltrated between this thickened mass and the bone forming the inner wall of the antrum mastoideum. This osseous wall was found to be very thin, very much eroded on its inner surface, and perforated at one part by an opening leading to the antrum mastoideum. On the outer surface of the mastoid process just behind the root of the zygoma, and about ten millimetres above and behind the external orifice of the osseous part of the canal of the ear, there was an opening in the bone four millimetres in diameter, which communicated at a distance of five millimetres with the antrum mastoideum. The bone, perforated by this channel, was dense and hard as ivory. On examining the osseous part of the external auditory canal, the posterior wall was found extremely thinned and perforated by three small apertures. This extremely thin perforated plate of bone formed a partition between the external auditory canal and the dilated antrum mastoideum. At the inner end of this posterior wall there was a large semilunar gap, with

the convexity outwards, which passed into the antrum mastoideum. A vertical antero-posterior section through the middle ear exposed a very unusual condition of the tympanum and mastoid cells. The whole of the normal contents of the tympanum were gone; there was not a vestige of the tympanic membrane or ossicular chain remaining. There was complete osseous closure of the fenestra ovalis. The fenestra rotunda, however, still remained. The promontory and floor of the tympanum were covered with soft granulation tissue. A white nipple-shaped hyperostotic growth, with two or three vertical grooves, occupied the position of the outer and inferior semicircular canals. Above that an excavation extended inwards nearly as far as the posterior surface of the petrous bone. The bone forming the floor of the tympanum was enormously thickened (twelve millimetres in thickness), and very dense. The mastoid cells had undergone a remarkable change. The antrum mastoideum was immensely dilated, forming a cavity two and a half centimetres long from within outwards, and nearly two centimetres from the back wall of the external auditory canal to the thin cortical layer separating the antrum from the groove for the lateral sinus, while it measured in height more than one centimetre and a half. The outer wall of this cavity was smooth and white, while the inner one was lined with granulation tissue. The mastoid cells proper were sclerosed and completely obliterated and, instead of large numbers of air-filled spaces, as in the normal condition, I found extremely hard, dense,

FIG. 2.

The inner half of the section of the right temporal bone. *a*, Inner part of the dilated antrum mastoideum. *b*, The dense compact tissue into which the mastoid cells are converted. *c*, Cavity of the tympanum. *d*, Dura mater. *e*, Inner wall of osseous part of Eustachian tube.

ivory-looking bone, through which I had great difficulty in working the saw. The two cavities, the tympanum and the greatly dilated antrum mastoideum, were filled with thick curdy matter, having a most fetid odour. Left temporal bone: The dura mater over the petrous part was normal. The osseous roof of the middle ear was also apparently free from pathological change. On examining the tympanic membrane I found a small round perforation, about two millimetres in diameter, in the posterior part of the membrana flaccida. This opening was partially closed by granulation tissue. On removing the roof of the middle ear I saw that the head of the malleus and the body of the incus were gone, and that the opening in the membrane communicated with the antrum mastoideum. The latter cavity was filled with muco-purulent fluid. The osseous layer forming the floor of the tympanic cavity was only about two millimetres in thickness, markedly contrasting with the right side, where the floor of the tympanum measured twelve millimetres in depth.

Remarks—In this single case we have an illustration in the right side of almost all the various consequences, both to the ear itself and to the interior of the cranium, following upon chronic purulent disease of the middle ear. The changes produced in the ear itself were: (1) Total loss of the tympanic membrane and ossicular chain; (2) osseous closure of the fenestra ovalis; (3) great dilatation of the cavities of the tympanum and antrum mastoideum; (4) conversion of the cellular structure of the mastoid cells into dense tissue of almost ivory consistence; (5) the formation of six carious

apertures opening into the dilated antrum mastoideum—namely, two communicating with the interior of the cranium, one perforating the outer wall of the mastoid process, and three passing into the external auditory canal. The changes produced by extension of the disease to the interior of the cranium were also very remarkable. The brain, the dura mater, and the lateral sinus were all three involved in serious morbid changes, including cerebral abscess, purulent meningitis, and changes in the lateral sinus producing closure of that channel. We have thus represented in this case all the morbid processes known to be the chief modes in which disease of the ear leads to a fatal issue. It is undoubtedly very rare to find the whole three present in the case of one patient. The condition of the lateral sinus is probably the most striking and interesting feature in this case. No doubt some degree of phlebitis of the lateral sinus is a not unfrequent complication of purulent disease of the middle ear. The mischief is, however, probably in most cases limited to some thickening of the walls of the sinus, and to a consequent diminution of its lumen. In regard to the frequency of the implication of the sinuses of the brain, Wreden gives as his experience that 14 per cent. of purulent ear disease are complicated by thrombosis of the sinuses of the interior of the cranium, while Dusch found that out of thirty-two cases of thrombosis of these sinuses twenty originated in purulent disease of the ear. Of the venous sinuses of the brain the lateral is much the most exposed to injurious influences from the ear. This is due to its anatomical connexion with the mastoid cells. In the deep concavity of the groove for the lateral sinus only a thin osseous partition separates the mastoid cells from the walls of the sinus. This partition is always perforated by openings for the passage of connective tissue, vessels, and nerves. Besides, it is not only frequently so thin as to be transparent, but it is no very uncommon thing to find it containing small gaps, in which case the mucous lining of the middle ear and the wall of the sinus are in direct contact. In the case before us the state of this osseous partition, eroded and perforated by carious disease, affords a ready explanation of the mode of extension of the disease in the ear to the walls of the lateral sinus. But without such disease of the bone the simple juxtaposition of the lateral sinus with the ear is in suppurative disease a source of great danger. All surgeons know that phlebitis and thrombosis are very apt to form in the vessels of a tissue which is the seat of purulent inflammation. When therefore, as is frequently the case, the lining of the mastoid cells is chronically inflamed, softened, or eroded, and when these cells are filled with decomposing purulent matter, emanating gases of putrefaction, is it surprising that phlebitis and thrombosis with their effects should be set up in this large venous trunk, so closely contiguous to and so connected by bloodvessels with the diseased part? More frequent extension of disease in the middle ear to the lateral sinus would take place but for two obstacles opposed by nature to such extension. First, the natural power of resistance presented by the strong tissue of the dura mater, which forms the walls of the sinus, even when this dura mater is in actual contact with a diseased part. In such circumstances the walls of the sinus may become merely thickened without further mischief. For example, necrosed and carious bone has been found in contact with the walls of the lateral sinus, without more mischief than some thickening of the walls of the latter. Secondly, the thickened lining membrane of the middle ear, together with the thickened osseous walls of the latter, circumscribes the morbid process in the ear and frequently forms an important barrier erected by nature against the invasion of this great venous channel of the brain by the disease in the ear. This case is one more added to the large record, which the literature of this subject presents, of fatal results arising out of old and neglected purulent disease of the ear. It is to be feared that, in spite of this dismal record, chronic purulent disease of the middle ear, frequently manifesting itself by the single symptom of a discharge from the ear, is still viewed in too many cases with indifference by the profession as well as by the public.

Albany-place, Glasgow.

At the Worship-street Police Court last week a manufacturer of German sausages in the East-end of London was fined £20, with costs, for using horseflesh, some of it in a state of decomposition, in the composition of the articles of food vended by him.