A SUCCESSFUL CASE OF LIGATURE OF INTERNAL JUGULAR VEIN AND TREPHINING LATERAL SINUS IN AN EAR CASE, WHILST THE SYMPTOMS OF PYÆMIA WERE WELL PRONOUNCED.¹

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ON December 7th, 1891, Dr. Sharkey was called into consultation by Dr. Gordon Hogg, of Chiswick, and Dr. Hartzthorne, to see a boy who was suffering from head symptoms and a high temperature with rigors. The case was as follows: A boy, aged 10, was seized on November 27th with acute pain in the head and right ear. On inquiry it was found that in the preceding May he had had influenza followed by pain in the right ear, and a discharge, which had continued in a trivial manner ever since. But on examination at this date (November 27th) Dr. Hogg could not find any pus in the auditory canal, and the pain seemed to be situated rather below the ear. On November 30th Dr. Hogg came to the conclusion that an abscess was probably forming in the tympanum, and ordered the canal to be freely syringed. On December 2nd, five days after the outset of the symptoms, he was sick and had what was thought to be a fit. He became livid and faint but had no definite epileptiform convulsions. It was probable that at this time the internal jugular vein was suddenly obstructed by thrombosis, and caused the slight cerebral disturbance resembling a fit. It may, however, have been due to the inflammatory infiltration around the internal jugular vein compressing the pneumogastric nerve, or in some way interfering with its function. This attack was followed a few hours afterwards by a rigor and a temperature of 105°F. On each of the next four succeeding days there was a rigor with a temperature varying from 103° to 105°, followed always by a sharp fall to a point between 97° and 99°, and accompanied by profuse sweating. There was no discharge from the ear, but the pain in the right side of the head and ear continued. A swelling also in the neck on the right side at the angle of the jaw appeared and steadily increased in size.

At the consultation held on December 7th, between Dr. Sharkey, Dr. Gordon Hogg, and Dr. Hartzthorne, the boy seemed in a very critical condition. He had had five rigors of the kind usually seen in pyæmia. He complained only of pain in head and ear, the swelling in the neck having come on some time after the onset of these symptoms. There was no other lesion to account for the illness except suppuration in the middle ear, which was previously discharging scarcely a noticeable amount of pus, but had ceased to discharge altogether at the time of the first commencement of the attack on November 27th. There was neither optic neuritis nor any tenderness over the mastoid. But with the history of a slight previous discharge from the right ear, persistent pain on the right side of head, and the inflammatory swelling at the right angle of the jaw, they came to the conclusion that the pyæmic-looking rigors and fever were probably indicative of suppurative thrombosis of the lateral sinus, and that the internal jugular was blocked below. Dr. Sharkey therefore suggested that a surgeon should be asked to see the case with reference to trephining over the lateral sinus and ligaturing the internal jugular in the neck. As the consultation was late in the afternoon, I was unable to reach the house before 9.30 P.M. In the meantime the boy had begun to complain of pain in the left forearm, and on examination a tender red patch was found, with a slight deep-seated swelling over the ulna. The lungs were described as being free from any discoverable lesion. There was no swelling or tenderness over the mastoid, but at the right angle of the jaw there was a large pyriform inflammatory swelling, which terminated abruptly at the upper border of the thyroid cartilage, leaving plenty of room below for a careful dissection of the internal jugular. No cord could be felt in this position, and it was thought that it might possibly be free from septic clot.

It was therefore determined to expose the internal jugular vein as low as possible in the neck and cut off its connection with the general circulation. Chloroform being given by Dr. Hogg, the internal jugular vein was exposed, and found to have extremely thick walls, resembling an artery, but to be quite collapsed and empty. It was then carefully freed from the surrounding tissues for some distance, and a double kangaroo tendon ligature passed round, divided, and tied at each end of the incision. The vein was then divided between the two ligatures, and the upper end still further separated and brought out at the upper angle of the wound. This was done for the purpose of being able at a later stage to syringe through from the lateral sinus whenever it should be opened. It had also the great advantage of separating it completely from the cardiac end of the vein. It was seen on section of the vein that a tail-like thrombus occupied its interior. This was floating free from the walls in a condition such as is often seen in advancing or receding thrombosis.

Considering the weak condition of the patient, it was thought best to postpone the further treatment of the case till the next day. We had, as we thought, cut off the connection between the infecting centre and the general circulation, which was the primary object of the operative treatment. The patient rallied well from this operation, and was transferred the next day by ambulance to the Victoria Home in Chelsea, where the subsequent treatment was carried out.

On the next two days the temperature rose nearly to 102° and 103° respectively, but without any rigors. He was distinctly stronger and better in general condition at the end of these two days than he was before the first operation.

On December 10th, with Mr. Tyrrell giving chloroform, and with the assistance of Messrs. Nairn and Staveley, I proceeded to trephine over the lateral sinus. A point 1 inch behind, and $\frac{1}{4}$ inch above, the centre of the right auditory canal was selected for the crown of the trephine. Pus began to well up as the bone was divided, and on the removal of the disc it was seen to come from the occipital side of the opening, and from beneath the dura mater. The lateral sinus occupied the centre of the trephine opening, and on testing it with a trocar was found to contain pus. The sinus was, therefore, slit up and washed out. The ligature was then removed from the upper end of the divided jugular in the neck, and the nozzle of the syringe in the sinus directed towards the jugular foramen. A full stream issued from the opening in the neck, carrying with it broken down clot and pus.

The swelling in the left forearm, which had been steadily increasing, was also incised. It contained no pus, but was an inflammatory effusion around the lower end of the ulna. The incision gave complete relief, for the boy made no further complain about the pain in this arm, which had previously been a source of frequent crying. He had also for some days complained about his left ankle, which we found on examination to be full of fluid, and red on the surface. As he had had enough operative treatment for that day, it was placed in a plaster-of-paris splint. His temperature fell after the trephining, and remained lower for forty-eight hours than it had been for the previous week.

On the night of December 12th it again rose to nearly 104°F., and the boy was constantly crying from pain in his ankle. It was, therefore, examined under chloroform, and found to be much larger. An incision was made on each side, and a quantity of pus evacuated. The joint was washed out, but no sutures or drainage tubes were employed. This also gave complete relief from pain, and only required a few dressings. The temperature after this never rose again to its former height, but occasionally showed a rise of from 1 to 2 degrees above the normal standard after some of the prolonged dressings that were necessary for the head, neck, arm and ankle. The boy made a slow but uninterrupted recovery, and is now quite well. He has a slight discharge from the right ear dependent on a few granulations in the tympanum, which may possibly require some simple treatment for their removal. The ankle eventually recovered all its movements, and no necrosis of the ulna took place.

The case is interesting from the fact that the pyæmic nature of the disease was demonstrated not only by the characteristic temperature and repeated rigors, but by the presence of metastatic suppuration. The explanation of how such

¹Read at a meeting of the South-Eastern Branch of the British Medical Association, at Norwood.

sources of infection passed the pulmonary and entered the systemic circulation must remain a matter of speculation. There were no lung symptoms; but a small deep-seated embolus in the lungs might easily escape diagnosis and yet disseminate secondary emboli through the systemic circulation.

Then if such primary embolus be not repeated to disorganise a large area of lung tissue, there is a fair chance of recovery. By the ligation of the vein we practically cut off the transit of these primary emboli. The secondary emboli are not in such vital parts, and easily yield to treatment by free incisions. It is the number and severity of the primary emboli in the lungs which destroy life in these cases.

The treatment adopted of at once ligaturing the internal jugular vein was based on the supposition that this vein was the means by which the disease was being disseminated. The reason why all the operations were not done at the same time was that the patient was simply too weak to bear such prolonged treatment. He could bear, as is seen by the result, each operation separately, but if the trephining had been done at the same time as the ligation of the vein I think he would have died. The order of the operations in these cases should, in my opinion, be the same as was employed in this patient, namely, first the ligation of the transmitting vein, so as to immediately cut off the communication with the rest of the circulation; secondly, the evacuation of the primary seat of disease; and, thirdly, the opening and cleansing of all the secondary foci that can be reached. And if this cannot all be done at one time, on account of the patient's condition, they should be carried out in the order indicated, with twenty-four or forty-eight hours' interval, according to the strength and general condition of the patient.

This paper should not be concluded without a reference to Mr. Ballance's work on this subject, which will be found in the Medical Society's *Transactions* for 1890, vol. xiii. It is to his energy and perseverance at St. Thomas's Hospital in the treatment of this otherwise hopeless disease that I am chiefly indebted for the pleasure of recording this successful case.

CATARRHAL ENTERITIS:

ETIOLOGY AND TREATMENT.

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THE expulsion from the intestines of mucous or false membranes is a symptom which is frequently observed in different morbid conditions and of different degrees of gravity. Perhaps it is a mistake to consider this morbid condition as a pathological entity; we may admit that it ought rather to be looked upon as a symptom characteristic of several pathological states than as a distinct and specific disease. At different times and by different authors it has been described under various names: by Van Swieten under that of glutinous diarrhoea; by Good under that of tubular diarrhoea; by Whitehead under that of mucous affection of the intestine; by Powell under that of painful affection of the intestine; Nonat calls it glairy enteritis. For reasons which I hope to develop in this paper, I propose to call it catarrhal enteritis. The diversity of names given by different authors renders the researches into its history very difficult.

Some modern authors have carefully studied the pathological anatomy of the disease, the exact seat, and the alterations it induces in the mucous membrane. But it is an affection which rarely causes death, consequently reliable information on these points is limited, and inversely the diversity of opinion as to them is considerable.

Researches as to the symptomatology of the affection have been more fortunate. In the 16th century this affection was described under the name of enteritis. It has been divided into two principal forms: first, that in which false membranes existed; and secondly, that in which the mucous secretion of the intestine formed an agglutinated deposit on the membrane of the intestine, and sometimes acquired such a density and cohesion as to be mistaken for false membranes. These products are either excreted with the faeces, or may even be so abundant as to provoke, by their presence, the act of

defaecation, and in these cases it is found that they are the sole constituents of the excreted mass.

The form, the consistence, the colour, and the quantity of these masses are very variable. Sometimes they present a membranous form, and are composed of long filaments, of cylinders, of tubes, often of a ribbon-like appearance. This last form explains why they have so often been mistaken for tænia. Perhaps the most frequent is the glairy form. In this the dejecta may appear as amorphous matters, sometimes mixed with faecal matters. At other times they form a voluminous mass large enough to fill a tumbler; in other cases they resemble sputa. All these different forms may be found in the same subject. But whatever the form or whatever the amount expelled, the composition of the mass is always identical. It is formed of amorphous matter, semi-transparent, containing in its centre some epithelial cylindrical cells, leucocytes, salts, and fatty granules, and invariably large colonies of bacteria.

It would, perhaps, be an error to suppose that the alterations of the intestinal secretions constitute the whole of this affection. I believe that there are also inflammatory lesions of the mucous membrane present. But, as we have already said, there are differences of opinion on this point amongst the authors who have been able to make *post-mortem* examination of such cases. The expulsion of mucus from the anus is a symptom well described in many affections—as, for instance, dysentery and certain well-defined forms of enteritis. The object of this paper is to call attention to a special form, of which I have been fortunate enough to observe 460 cases. The study of this large number of cases has enabled me, as I hope to show, to obtain some fresh information as to the etiology of the affection.

All the patients complained of difficulty of digestion; generally the description they gave of their symptoms was very simple. It was that of all dyspeptic patients. The digestion was difficult, lasted a long while, was accompanied by swelling and tympanites of the stomach after meals, sometimes immediately after, sometimes some hours later, during the second or intestinal digestion. The intestinal function was deranged. At first there was constipation, but after some time alternations of constipation and diarrhoea, the action of the bowels became more and more difficult, and was sometimes painful. Often the quantity of excreta was insufficient. The patients remarked that they had not the relief that a thorough and complete action of the bowels ought to give.

When their attention was called to the motions they remarked in them the presence of a glairy substance of most various forms. Often they were under the impression that fragments of a tænia or a lumbricoid worm had been passed, sometimes the tubular form induced them to attribute the secretion to an exfoliation of the mucous membrane of the intestine.

Generally these secretions were mixed with faecal matter, sometimes they constituted the whole of the motion, which was more or less considerable; sometimes they compared it to a bronchial secretion.

The colour of the secretion was variable. It depended on the length of sojourn in the intestine, or it might undergo a change by mixture with the intestinal secretions or with the products of digestion. I have found them in some cases, immediately after expulsion, clear and transparent and resembling the white of an egg. They sometimes exhibit streaks of blood, but this is rare, except where the patients suffer from hæmorrhoids.

The study of the discharges is important, as without them it would be difficult to find any characteristic signs which would enable us to diagnose this affection. These patients all suffer from dyspepsia, they all present a coated condition of the tongue, more or less anorexia, swelling and discomfort of the stomach or intestines—in a word all the symptoms of gastrointestinal dyspepsia. The examination of the abdomen reveals nothing or only those symptoms which characterise colitis or enterocolitis. The symptoms I have just enumerated belong to many intestinal affections. Palpation or percussion does not offer any special indications.

Professor Sée, whose work on *Atonie Intestinale* is so remarkable, is of opinion that prolonged constipation has induced an irritation of the intestine. No doubt the presence of hardened faecal matter has induced an inflammatory con-