SOCIETIES' PROCEEDINGS

ROYAL SOCIETY OF MEDICINE—SECTION OF OTOLOGY.

December 5, 1930.

President—ALEX. TWEEDIE, F.R.C.S.

Some General Aspects of Intracranial Complications of Aural Infection.—Dr. GEORGE RIDDOCH. The case is published *in extenso* in the *Journal of Laryngology and Otology*, Vol. xlvi., p. 225, April 1931.

DISCUSSION.

The PRESIDENT said that ready help from the neurologist and ophthalmologist was most important, and he hoped that one day some neurologist would devote himself entirely to the assistance of the combined nasal, laryngeal and aural specialities.

With regard to lateral sinus thrombosis, diagnosis of the typical case was of course comparatively simple; it was the recognition of the "mural" forms and associated blood infection for which we particularly required help.

Sir JAMES DUNDAS-GRANT said that when the lateral sinus was exposed and there was no blockage, it was easy to get a fluctuation between the internal jugular vein, not exposed, and the exposed sinus; and if this was absent one could be sure there was a complete blockage below. Extradural abscess could exist without any symptoms being present. A discharge from an extradural abscess into the meatus could be recognised as such if an increased flow from the tympanum and meatus was accompanied by diminution of symptoms. There was sometimes what had been described as the "shirt-stud" abscess, *i.e.*, when it had perforated the squamous bone and there was a large subperiosteal collection of pus outside, and the waist of it (the stud) was in the bone, the other part of the "stud" being extradural and sometimes issuing by the middle ear and external meatus.

He thought otologists had decided that tenderness over the mastoid in the first week of acute suppurative inflammation in the ear indicated merely a congestion; but if it continued it indicated that inflammation was established, and that probably there was pus already forming in the superficial cells.

Another point of interest was the question of the localised superficial cerebral abscess. One or two cases had been reported to the Section in which an abscess had been found in an unusual region. He once had a case in which the first symptom was paresis of the opposite arm, and at the post-mortem examination several superficial abscesses of the brain were discovered.

Dr. Riddoch had referred to the cerebello-pontine angle. There had been some cases in which cerebellar symptoms had been well marked, but

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had disappeared when the dura mater was laid open and a puncture made in the meninges allowing the escape of fluid. In conditions in this angle one should keep in mind the labyrinthine reactions: the cold caloric test might show loss of reaction of all the semicircular canals on the affected side and of the vertical canals only on the sound side.

Dr. C. P. SYMONDS said that in most cases in which it was reasonably certain that a cerebral abscess was present, the localisation, on neurological grounds, was not particularly difficult. The difficult clinical problem was that of deciding whether there was an abscess or intracranial complication.

What were the symptoms and signs which corresponded with the evolution of the intracranial complication? In a case of proven abscess it would repay one to look back on the history and try to find the points which should have led one in the first place to suspect invasion. Here he would ask otologists a question: How much, in the way of pain, fever and constitutional disturbance could be allowed for, after an uncomplicated case of otitis media after drainage, or simple mastoidectomy? He would like to hear from otologists what was the normal clinical picture of post-operative convalescence in acute otitis media, or after mastoidectomy. He agreed with Dr. Riddoch on the valuable point that there was a tendency to regard the interval between invasion and declared cerebral abscess as a period of latency, but it was probably no more than relative latency.

Since he had read a paper before this Section three years ago he had learned to recognise a particular clinical picture, which seemed to stand by itself. He had had three instances of it, and the story in each was much the same: acute otitis media, or an exacerbation of an old otitis media, followed by symptoms indicating meningitis.

When the patient was seen there was a swelling of the optic discs, which was surprising to the beholder, in view of the relatively good health and the mildness of the symptom picture.

Lumbar puncture showed a gross increase of intracranial pressure, though the cerebrospinal fluid would be found to be normal. If an exploratory operation was undertaken the dura would be found to be under very great tension. An exploratory puncture in the middle fossa would enter the lateral ventricle at no very great depth, and the cerebrospinal fluid from the ventricle would be found to be normal. There were no localising signs of cerebellar or temporal abscess in his three cases, and the patients made a complete recovery.

[Dr. SYMONDS then quoted the details of an interesting typical case seen by Mr. W. M. Mollison and himself in September 1928.]

Dr. J. S. FRASER, referring to Dr. Riddoch's criticism of the term "serous meningitis," said that Dr. Riddoch might, if he preferred, call it "mild pyogenic meningitis." In cases especially of extradural abscess in the posterior fossa, benign serous meningitis was met with. There were other cases of malignant serous meningitis in which the patient died before the cerebrospinal fluid had become purulent, but those were not now being discussed.

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With regard to the case of superficial abscess in the posterior fossa, he asked how the cerebellum was explored. One method was to explore medially to the descending portion of the lateral sinus; the other was posteriorly behind and below the sinus. If the case of superficial abscess in the posterior fossa had been explored medially to the lateral sinus, the abscess about the cerebello-pontine angle would not have been missed.

He was interested to hear Dr. Riddoch mention the time-honoured text-book dictum about tenderness along the internal jugular vein; the speaker's own experience was that this was not a sign of lateral sinus thrombosis. But having got into text-books it would be difficult to prevent its continued appearance in them.

With regard to headache *qua* headache, after the mastoid operation had been performed the ordinary case of mastoiditis did not complain of headache, but of pain on moving the head. But if a patient who had had the mastoid operation had severe or generalised headache, he would suspect an intracranial complication, probably meningitis.

Dr. Symonds had given a picture which corresponded very closely to what otologists knew as Gradenigo's syndrome, *i.e.*, acute otitis media, paresis of the 6th nerve, and intense pain over the corresponding side of the face due to involvement of the 5th nerve. It was said that this was due to localised meningitis towards the apex of the petrous bone, affecting the 6th nerve as it passed through the dura. In most of these cases the prognosis was good, though some had gone on to purulent meningitis and death.

Mr. WATKYN-THOMAS said that three days ago he saw, for the first time, a case of tenderness over the jugular vein, and in that case the tenderness was due to infected glands surrounding the vein. He did not see how mastoiditis alone could cause headache at the vertex, unless there was some dural involvement, but accessory sinus infection might be a complicating factor which must be remembered as a possibility in the presence of mastoiditis. In cerebello-pontine angle conditions he had three times noticed one sign, namely, the firm tucking of the head over to the side affected, the sternomastoid muscle not being affected; any attempt to put the head straight was much resented. With regard to the diagnosis between labyrinthine and cerebellar conditions, he thought that as the lesion advanced the labyrinthine signs always tended to pass off when once the destruction was complete, whereas cerebellar signs always became greater.

Mr. T. B. LAYTON, in reply to Dr. Symonds' questions, said he thought that after an operation for acute mastoiditis all the untoward symptoms including the pain, should have disappeared within forty-eight hours. If not, and one washed out the wound with a pint of saline the temperature would probably come straight down, otherwise a further complication should be suspected. To this there were two exceptions. Inflammation of the mastoid was not of itself a disease; it was part of a general inflammation in the upper respiratory tract, and this might cause the rise in temperature, especially if the mucous membrane of the respiratory tract and the glands of the neck were particularly involved. Secondly, general septicæmia might be arising at the time the mastoid trouble was

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developing ; or the mere fact that one operated in an early stage of inflammation of the bone might determine the septicæmia. He did not think the tenderness over the mastoid was a symptom of inflammation of the cancellous bone and it was this that one wanted to diagnose ; it was evidence that the inflammation had spread through the cortical bone and was beginning to involve the periosteum.

With regard to acute otitis media, after the drum-head was ruptured, or after paracentesis, pain disappeared at once. If pain was present next day he would begin to suspect that the bone behind the middle ear was involved. Acute otitis media tended to get well in four days.

Thrombosis of the lateral sinus was a condition which should be left alone, as it was nature's method of arresting the spread of infection. This could be suspected at the operation when there were changes in the dura, either œdema or a greyness that showed it was beginning to slough, or if in the middle of the granulations there was a small quantity of pus.

Mr. LOWNDES YATES said that he had sometimes gained a hint of likelihood of intracranial complications from the type of mastoid revealed at operation. Where the mastoid was pneumatic, pus passed more easily in an outward direction. These were the cases which had tenderness over the mastoid owing to periostitis. In other cases the outer table was thick and the inner table was easily perforated by pus, and patients were then more liable to intracranial complications.

Mr. SYDNEY SCOTT said a physician might sometimes think that an otologist knew a little about the ear only and was not wide awake for other troubles. Some otologists had not forgotten all their medicine, and were still interested in some branch of general surgery, and so did look out for these cases at an early stage. When it was appreciated that the otologist might have a brain abscess to deal with, so large that it involved the whole temporosphenoidal lobe, extending also into the occipital lobe and was undiagnosable by the physician or the neurologist, it would be seen that the otologist had his difficulties. He had seen such a case without optic neuritis, and when the dura mater was exposed there was no increase of intracranial pressure.

Another type of case was one diagnosed as a brain tumour for two years, but in which an encapsuled brain abscess was found in the region of the uncinate gyrus. Mastoid infections were often associated with other complications. No surgeon should overlook the possibility of an empyema. He (the speaker) was always anxious to have not only the neurologist, but also the general physician to see his obscure and difficult cases.

Mr. H. V. FORSTER said he used to imagine that to explore with a medium-sized needle and serum syringe would not be a reliable method in the diagnosis of brain abscess until he read two papers by Robert Lund,* which had impressed him with its value. During the last two and a half years he used this method in five such cases. All the patients had recovered, and this fact might be due to earlier recognition by this means. The amount of trauma was negligible, and there was apparently no detrimental effect, a conclusion further supported in negative cases when healthy brain tissue had been punctured.

* *Acta Oto-Laryngologica*, vol. xi., fasc. 3.

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Dr. RIDDOCH (in reply) said that our knowledge of this important subject was far from complete, and it was probable that much could be gained from its study. For example, after mastoidectomy, patients whose symptoms did not soon disappear after operation should not be lost sight of, and an attempt might be made in hospital practice to keep in touch with them.

In regard to Mr. Fraser's assertion that Dr. Symonds' cases were examples of Gradenigo's syndrome, an essential difference was the development of hydrocephalic signs, such as papillœdema, which inevitably led to the consideration of abscess.

He did not regard the question of the terminology of "serous meningitis" as trivial. Why call this relatively innocuous variety "serous," since meningitis was inevitably associated with increase of fluid in the subarachnoid space? The term "serous" had therefore no special pathological significance, and was, in addition, inaccurate as well as a cloak that hid its infective etiology.

Changes occurring in the Cerebrospinal Fluid in Some Intracranial Complications of Otitic Origin. — Dr. A. B. ROSHER. The case is published *in extenso* in the *Journal of Laryngology and Otology*, Vol. xlvi., p. 236, April 1931.

DISCUSSION.

Mr. PETERS asked how long it was before the condition of inflammation in the subarachnoid was recognised by lumbar puncture. Some years ago he saw many cases of cerebrospinal fever, and it was often forty-eight hours after the onset of the disease before the pathologist could indicate a definite diagnosis.

Dr. J. S. FRASER said he was surprised at this division of meningitis into primary, secondary and tertiary, and especially at the inclusion in the secondary group of cases in which organisms were present. From the otological point of view one knew that cases in which organisms were present in films and cultures were nearly always fatal. Why was so much importance attached to the chlorides in the cerebrospinal fluid? He would have thought it better to take out from the secondary group those cases in which organisms were present and put them into the tertiary one.

Did Dr. Rosher consider that there was any danger of spreading a localised trouble in the internal meatus and posterior fossa downwards by lumbar puncture?

Mr. SYDNEY SCOTT said the cerebrospinal fluid helped very little in the estimation of the seriousness of a case unless there was repeated puncture and examination. He had been surprised at the number of cases which recovered although organisms had been found in the cerebrospinal fluid.

In some subsequently fatal cases the fluid when withdrawn seemed to be normal, but the pathologist, when the diagnosis was doubtful, had made cultures and had found pneumococci.

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Mr. O. POPPER said that cerebrospinal fluid gave valuable information in cases in children when the hearing tests could not be used. A mere increase in the number of white cells was diagnostic of acute mastoiditis. According to Neumann's law an intracranial infection of otological origin was always in the immediate vicinity of the original infection.

When the tegmen tympani or antri were thin and vascular, as in children, there was always a protective cellular reaction.

Mr. SYDNEY SCOTT said there was a danger in cerebellar abscess of arresting respiration by taking away too much cerebrospinal fluid. He had known patients cease breathing when too much fluid was withdrawn.

Dr. ROSHER (in reply) said that it was rare to find organisms in culture when not seen in films in cases of meningitis (following ear disease). At the onset of intracranial complications the period which must elapse before pathological changes could be detected must vary. (The earliest time from the onset he had seen recorded was three hours.) One learned, by practice, to know what organisms found were likely to be due to contamination. People were apt to be content with too few examinations of the cerebrospinal fluid. If, as a routine, examinations of the fluid were made at least every twenty-four hours, more information about these cases might be obtained. There might be something in Dr. Fraser's remark as to the possibility of spreading the infection downwards, particularly in the primary stage, by lumbar puncture, especially if a large quantity of fluid was withdrawn, but on the whole, as only 6 c.c. were required for all the tests, he doubted whether any harm was done to the patient by withdrawing this quantity of fluid. And it was due to the fact that it had been definitely stated in text-books that lumbar puncture was a beneficial measure that the present plea for more frequent examinations was made.

Right Chronic Temporosphenoidal Abscess. Wagner's Osteoplastic Craniotomy and Drainage. Radical Mastoidectomy Five Months Later.—L. GRAHAM BROWN, M.D., F.R.C.S.

17.12.29.—Patient, J. H. M., male, aged 25, with bilateral chronic suppurative otitis media since childhood, complained that three days previously he had had an attack of giddiness during which he fell over.

24.12.29.—Left hospital with condition undiagnosed.

11.2.30.—Readmitted, complaining of attacks of headache, giddiness and vomiting of three weeks' duration. Thick yellow discharge from both ears.

26.2.30.—Abscess of right temporosphenoidal lobe now suspected, though the localising signs were by no means clear. Operation decided upon.

3.3.30.—Operation by Mr. R. L. Galloway, under intratracheal gas and oxygen anæsthesia. Wagner's osteoplastic craniotomy performed. A large right temporosphenoidal abscess was located and evacuated by means of the cannula of a large brain-exploring needle. The wound was closed after exteriorising the cannula through

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the bone-flap, and the abscess cavity was further cleansed by four-hourly injections of eusol through a fine Carrel tube inserted into the cannula and left *in situ*. Wound healed.

10.4.30.—The exhibitor saw the patient for the first time. The discharge from the right ear had ceased, but there were symptoms of renewed intracranial pressure.

12.4.30. — Secondary drainage of temporosphenoidal abscess performed by Mr. Galloway, and $1\frac{1}{2}$ oz. of thick, gelatinous pus was evacuated. Cleansing of the cavity was effected as before by means of the Carrel tube method. Patient now made an uninterrupted recovery.

14.8.30.—Right radical mastoidectomy. No macroscopical evidence of the path of infection to the brain could be seen.

27.11.30.—Patient remains well. The right ear cavity has not completely epidermised and there is a slight discharge.

Mr. H. V. FORSTER said that in the drainage of brain abscess by the conservative method he used the finest rubber catheter at the first insertion and he had become enthusiastic about this method, as he had had a series of five consecutive cases which recovered after that treatment. He favoured conservative drainage through the untraumatised dura. In exploring for the abscess with the needle he was in the habit of drawing off the pus into a serum syringe and he had drawn off as much as $2\frac{1}{2}$ oz. There seemed to be no ill effects. He did not think the catheter acted as a drain-pipe but that it served for drainage at its circumference.

Mr. GRAHAM BROWN (in reply) said he was only called in late after the operation, when secondary symptoms of intracranial pressure had arisen. Further drainage was carried out by the surgeon (Mr. Galloway) using a needle $\frac{3}{16}$ in. in diameter and introducing through the cannula a fine Carrel tube. Into the brain cavity was injected a small quantity of eusol, four-hourly, until there was healing. The question was whether operation should not be carried out through an aseptic area, rather than through a contaminated tract. How could one avoid a spread of meningitis by operating? If one could go through the tract without breaking down the adhesions, there should be a reasonable chance of curing the abscess, but if one could not see the exact tract there was the danger of a breaking down of these adhesions and consequent meningitis, which was invariably fatal. Therefore why not go through an aseptic area and deal with the focus later? Many more cures might be brought about in this way. Mr. Galloway turned down a large osteoplastic flap over the temporal area, then incised the dura, and evacuated the abscess by means of a large exploring needle. He then removed a piece of bone from the lower margin of the bone-flap and brought the cannula of the exploring needle to the surface through the corresponding scalp area.

Mr. SYDNEY SCOTT said that in the ordinary case of otitic brain abscess, diagnosable before operation, it was preferable to follow the path of infection, to explore and drain the abscess. Still lives had been saved by operating directly on the brain without previously opening the primary

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seat of infection. Where, for certain reasons, the path of infection was not followed, and the brain was exposed by radiate incision of the dura mater, when pressure was high, the brain would bulge through the opening, drainage could be effected without affecting the space between dura mater and arachnoid. He was afraid of the small incision in the dura mater, for no pus might be seen and yet an abscess might leak into the dural-arachnoid space. Ballance had described experiments to show that large exposure of dura mater did not produce decompression of the contents unless the dura mater also was incised.

Mr. GRAHAM BROWN, answering Mr. Scott, said Mr. Galloway did see a bulging of brain, so that he must have opened the dura mater sufficiently to realise there was an abscess, and from it, as a matter of fact, he obtained 2 oz. of pus.

Mr. J. S. FRASER said the risk of infection and production of meningitis could be avoided to some extent by the Lemaitre method. He had recently had a case of temporal lobe abscess in which the bone of the tegmen was greenish-grey. On removing it there was a collection of pus between the roof of the antrum and the dura. He put in a Cushing pus-seeker and evacuated two tablespoonfuls of pus from an abscess. No more pus had since come away. As there had since been progressive improvement he was leaving the case alone.*

Intracranial Division of Auditory Nerve for Relief of Tinnitus—A. DICKSON WRIGHT, M.S.—R. O., male, aged 49. History: 1922. Treatment for diabetes which has continued till the present.

1929.—Tinnitus developed in the right ear and became gradually worse. January 1930: Operation through mastoid region with a view to checking the tinnitus. The results of this operation were: (*a*) suppurative otitis; (*b*) total deafness on right side; (*c*) total right facial palsy; (*d*) intensification of the tinnitus.

4.11.30.—Condition on admission to St. Mary's Hospital. The noises were affecting the patient's mentality, he was sleeping very little and there was a suggestion of suicidal tendency. The tinnitus was of the nature of church bells, twittering birds and, occasionally, human voices. There was a foul discharge from the right ear, which was completely deaf. Diabetes mellitus was severe, the urine containing 4 per cent. and the blood 56 per cent. of sugar, and 40 units of insulin daily were required to control it. Vertigo and nystagmus were both absent. 15.11.30—On the suggestion of Dr. Wilfred Harris the 8th nerve was divided intracranially. Local anæsthesia was used and the nerve exposed through the posterior fossa with backward retraction of the cerebellum. There were some meningeal adhesions, possibly the result of the previous

* *Postscript*, 13.12.30.—Case still doing well, fourteen days after operation.

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operation. The auditory and facial nerves were separated and the former divided. Convalescence was complicated only by the diabetes, which for a short time became difficult to control, but the patient was able to sit up on the fifth day.

As a result of the operation the tinnitus is almost completely abolished, the patient sleeps well and his mental condition is much improved.

FURTHER REPORT OF CASES PREVIOUSLY SHOWN.

Acute Lateral Sinus Thrombophlebitis treated by Operation, with Preservation of Tympanic Membrane (previously shown February 1928).—Sir JAMES DUNDAS-GRANT, K.B.E., M.D.

Temporosphenoidal Abscess in a Young Woman (previously shown March 1924).—Sir JAMES DUNDAS-GRANT, K.B.E., M.D.

Right-sided Cerebellar Abscess and Thrombosis of Lateral Sinus and Jugular Bulb. Operated on in November 1905, and shown at a Meeting of the Otological Society on 5th February 1906.—Sir JAMES DUNDAS-GRANT, K.B.E., M.D.

Complete recovery took place and the patient served in the R.F.A during the whole of the European War.

When recently tested: Rotation to both sides was followed by nystagmus, but no past-pointing, falling or giddiness.

Caloric test (cold air) to test the *right* horizontal canal, produced no nystagmus after one and a half minutes, no giddiness or past-pointing. When applied to test the *left* horizontal canal, there was slight nystagmus in twenty-eight seconds, no past-pointing but slight tendency to fall to left. With the galvanic test to each side there was nystagmus.

SCOTTISH SOCIETY OF OTOLOGY AND LARYNGOLOGY

WESTERN INFIRMARY, GLASGOW

November 29, 1930

President—G. EWART MARTIN

Some Endoscopic Experiences—G. EWART MARTIN.

WHEN it was suggested at the Summer Meeting of the Scottish Oto-Laryngological Society, that I should give a short account of some endoscopic cases I thought it would be more interesting to give a short resumé of the case records of one or two curious cases requiring endoscopic diagnosis and treatment.

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