

the footplate of the stapes. From the basal coil of the cochlea the infection appears to have passed to the subarachnoid space along the fibres of the cochlear nerve, and also along the perilymphatic aqueduct. It must be admitted, however, that it is quite possible that the infection has gone the other way, *i.e.* that the scala tympani of the basal coil of the cochlea has been infected by pus passing up the perilymphatic aqueduct from the subarachnoid space, and that in the internal meatus the infection is passing along the perineural lymph sheaths towards the cochlea. From the microscopic examination of the ear there can be no doubt that the purulent labyrinthitis had not burst outwards, *i.e.* the tympanic cavity has not become infected from the labyrinth. Had the child recovered she would have been markedly or totally deaf in the left ear, and if the right ear had also been the seat of purulent labyrinthitis, she would almost certainly have been so deaf that she would not have learned to speak, *i.e.* she would have become an "acquired" deaf-mute. If such cases of labyrinthitis occur before the child learns to talk at all, they may be regarded in after life as cases of congenital deaf-mutism, as the parents do not understand the nature of the illness from which the child has suffered in infancy, and merely give a history that the child has never spoken.

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#### A CASE OF SUBACUTE PURULENT OTITIS MEDIA, LABYRINTHITIS, AND PURULENT LEPTOMENIN- GITIS DUE TO A CAPSULATED STREPTOCOCCUS: SPONTANEOUS RECOVERY.

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A. K., male, aged 32 years, fireman, suffered from pain and "noises" in the right ear in January 1915. In the end of February he had an attack which he describes as "influenza," during which the earache recurred, and was accompanied by headache, backache, vomiting, and epistaxis; one attack of vomiting lasted twelve hours. At this time the patient was in bed for nearly three weeks, but the right ear only began to discharge in the beginning of March. About the third week in March the pain in the ear and back had sufficiently abated to enable the patient to return to his work at the fire station, and he remained

at work until Friday, 26th March, when the pain in his ear and head recurred. On the following day the pain was worse, and the patient went to bed. On 28th March, about 4 A.M., he felt dizzy and vomited, and the pain in the ear and head became still more severe. In the evening he began to complain that the light was annoying him, and his friends state that he buried his head beneath the bed-clothes. He felt chilly at this time, and complained of pain in his right knee and in the back of the neck. The pain in his head also extended forwards over the top of the head, and at 8 P.M. he felt sick, but was afraid to vomit in case of increasing the headache. At 10 P.M. he vomited, and this was repeated several times till 4 A.M., when the vomiting stopped. The vomiting was accompanied by much retching. During the evening the patient complained of thirst, and about midnight his mental condition suddenly changed. He began to fling his arms about, try to get out of bed, kept putting his hands to his forehead, and also to his eyes and ears. He shouted a great deal, calling out his wife's name. He did not recognise those about him, and stared blankly at them. He was admitted to a medical ward on the 29th of March.

On admission the temperature was  $102.4^{\circ}$  F., the pulse 92, and the respirations 28. A leucocyte count showed 25,000 per c.cm. Lumbar puncture was performed, and purulent fluid under great tension was withdrawn. The report on this fluid was as follows:—"Cells are numerous and are chiefly polymorphs, with a fair number of lymphocytes and a few large mononuclear cells. In films made from the deposit no meningococci were found, but there were gram-positive diplococci of the pneumococcus type. These have not grown on culture after fifty hours."

Unfortunately a diagnosis of "epidemic cerebro-spinal meningitis" had been arrived at, and the case had been transferred to the Leith Public Health Hospital at East Pilton before the above report on the cerebro-spinal fluid was received. The error in diagnosis is easily understood when it is stated that just before the patient became severely ill on 28th March he had been visiting his mother-in-law, who was in a dangerous condition, and whose illness was ascertained to be "spotted fever." She died while the patient was in hospital at East Pilton.

*Condition of patient* on admission to East Pilton Hospital at 4.30 P.M. on 29th March.—The patient is delirious, with short intervals of semi-consciousness. He mutters and shouts angrily (always), sees and addresses imaginary friends, tosses his arms about, often putting them to his forehead and neck, avoids the light, but needs no restraint. Face is flushed and frowning, with the eyelids half closed. There is no retraction of head; in fact, the head is bent forward towards his chest and his back arched forwards. The muscles at the back of his neck are a little stiff, but the head can easily be moved, although with some pain. The muscles of his back are not stiff. Pupils are equal,

slightly dilated, and react sluggishly to light. Photophobia marked. Tongue furred and dry; lips dry, but no herpes. Throat is slightly inflamed; many bad teeth. Slight rigidity of abdominal wall. Skin moist; no sign of any rash on body. Kernig's sign present. Abdominal reflex present. The patient is well nourished, and the lungs and heart are normal.

On admission the patient passed urine in bed, but a specimen obtained later showed a trace of albumin. Lumbar puncture was performed, and yielded turbid fluid under pressure. Microscopic examination showed the same conditions as stated above.

30th March.—Patient seems quite conscious for a minute or two at long intervals; complains of pain in head; cries out sharply and suddenly. Temperature 100° F.

In the evening patient much quieter—sleeps at intervals. At times quite conscious but dazed; complains of pain in neck and in calves. The pain in head is more severe over the forehead. Vomits a good deal.

31st March.—Temperature normal; fairly comfortable; headache still severe; pain in right ear and over mastoid region. At night he slept a good deal and was much more comfortable. Photophobia still present; complains of dizziness and tendency to fall to right side (he was not sitting up, but said he felt as if he were falling to right side—side of ear trouble). Right ear discharging freely. Left ear is also painful. Spontaneous nystagmus present when eyes are turned to left.

1st April.—Headache less and confined to forehead, especially left part; no pain in neck. Left ear shows slight discharge; no pain. Right ear still discharging and painful. Giddiness still present, nystagmus also. Patient complains of seeing double. Patient improved continuously after this.

7th April.—Patient allowed to sit up in blankets. Kernig's sign absent; giddiness very marked; tendency to fall to right side; ears both dry.

10th April.—Patient allowed to get up. When he walks he leans towards his left. With eyes closed and feet together he sways towards his right.

13th April.—Discharged, and sent to Royal Infirmary, Edinburgh.

Examination at Ear and Throat Department, Royal Infirmary, 14th April.—The *right* tympanic membrane is red and bulging posteriorly. The postero-superior quadrant is especially bulging, but no pus is blown through on Valsalva's inflation. There is no mastoid tenderness. The *left* tympanic membrane is slightly indrawn and opaque, but there is no loss of gloss nor any sign of present inflammation.

Hearing Tests.—The watch is heard on the forehead and left mastoid,

but not on the right. The watch is heard at  $\frac{2}{30}$  inches by the left ear, but is not heard even on contact by the right ear.

Bone conduction for the medium tuning-fork on the vertex is not lengthened. The vibration tuning-fork placed on the middle line of the vertex is heard in the better ear (left). On the left side air conduction is better than bone conduction (Rinne positive). On the right side the tuning-fork is not heard by air conduction, but is heard by bone conduction—probably in the good ear (Rinne infinite negative). The forks  $C_{32}$ ,  $C_{64}$ ,  $C_{128}$ , and  $C_{256}$  are all heard by air conduction by left ear but not by right. The forks  $C_{512}$ ,  $C_{1024}$ , and  $C_{2048}$  are apparently heard by both ears, but better by left than by right. (These forks can be heard when both ears are closed with the fingers.)

*Monochord.*—The upper tone limit of the right ear was apparently 9000. With left ear closed with finger, the patient apparently hears the raised voice at 18 inches, but with the noise apparatus in left ear he is quite deaf.

*Vestibular Apparatus.*—No spontaneous nystagmus; no Rombergism; no fistula symptom; spontaneous pointing normal.

*Rotation Test.*—Turning to right (10 times in 20 seconds) and stopping suddenly produces nystagmus to the left, which lasts 15 seconds. Turning to the left (10 times in 20 seconds) and stopping suddenly produces a lesser degree of nystagmus to the right, lasting 12 seconds. (*Note.*—The rotation tests tend to show that the right labyrinth is not functioning.)

*Caloric Test.*—Syringing right ear with cold lotion for three minutes produced absolutely no nystagmus. Syringing left ear with cold lotion produced horizontal and rotary nystagmus to the right in about 35 seconds, with marked giddiness, and with the typical pointing error to the left, and tendency to fall to the left when patient stood with feet together and eyes shut.

(*Summary of Functional Examination of the Ear.*—Complete loss of vestibular function on right side; possibly a little hearing power still remains, but even this is uncertain.)

*14th May.*—Patient reports after being in the country for a month. He feels well. The right ear is quite dry, but quite deaf. With the noise apparatus in the left ear the patient hears nothing. There is no spontaneous nystagmus. No Rombergism, and patient can walk in a straight line with his eyes shut. Rotation to right and also rotation to left both produce nystagmus of only about 12 seconds' duration (compensation phenomenon). Patient is to start easy work on Monday.

*5th June.*—Condition quite satisfactory.

REMARKS.—The patient had a mild attack of otitis media without otorrhoea in January 1915. The trouble recurred in February, and at this time appears to have been accompanied by labyrinthine or intra-

cranial irritation, as evidenced by the headache and vomiting. Again, there does not seem to have been any discharge from the ear at this time. Otorrhœa only commenced in the beginning of March. After three weeks in bed the patient resumed his work about the 20th of March, but after he had been only one week at work he became very ill with symptoms of purulent labyrinthitis, rapidly passing on to leptomeningitis. We know that extreme care and quiet are necessary in cases of latent labyrinthitis, if purulent leptomeningitis is to be avoided. Such cases are going about with a "powder magazine in their heads." In the present case the rapid subsidence of the meningitis is remarkable, the stage of delirium followed by semi-coma only lasting for 48 hours. As is usual in such cases as the present, the patient made a complete recovery as far as balancing is concerned, *i.e.* the loss of one vestibular apparatus is compensated for by the healthy side taking on the function. The loss of one vestibular apparatus is not noticed by the patient, but the unilateral deafness is a source of inconvenience. The case demonstrates the importance of microscopic examination of a film made from the deposit from the cerebro-spinal fluid in a case of meningitis. The fact that the patient had been visiting his mother-in-law, and that she was known to be suffering from "spotted fever," made the diagnosis of epidemic meningitis a natural, though hardly a correct, one. The case further shows that purulent otitic meningitis may be recovered from without operation.

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## A CASE OF MYXŒDEMA, WITH TETANY AND SUPRARENAL INSUFFICIENCY.

By JOHN EASON, M.D.

THE case described below presents some unusual features of considerable interest in relation to the functions of the ductless glands. The main points may be summarised as follows:—

1. Myxœdema undergoing the customary improvement on thyroid.
2. Some clinical evidences of suprarenal inadequacy, with improvement after administration of adrenalin.
3. Slight fibrosis of one suprarenal gland.
4. Symptoms bearing a resemblance to both tetany and paralysis agitans, diseases which have been ascribed to parathyroid changes.
5. In one parathyroid there were appearances suggesting great secretory activity. There were no evidences of parathyroid disease.
6. The ultimate failure of thyroid medication.

Mrs. B., aged 37, was admitted to hospital on 24th June 1910. She stated she had been well until the birth of her last child 2 years and 9 months ago. She then observed that her skin became darker in colour, drier, and more scaly than formerly, although it was always rather dry. The dryness and scali-