

treated with iodide without improvement. Examination revealed a papilloma occupying the anterior third of the left cord, yellowish-white in colour, sessile, with a zone of hyperæmia about its base. The cervical glands were not involved. Microscopic examination decided the diagnosis of epithelioma.

March 29.—Thyrotomy was performed. The crico-thyroid membrane and thyroid cartilage were divided and the anterior third of the left cord was removed.

Fulguration was then practised by the Keating-Hart's method for four minutes. The breathing was unaffected throughout the procedure. The wound was then closed, catgut sutures being used for the crico-thyroid and thyro-hyoid membranes, and silk-worm gut for the muscular and cutaneous planes. The thyroid cartilage was not sutured. A gauze wick was inserted into the inferior angle of the wound.

April 13.—The external wound had cicatrised with little adhesion to the skin. A white false membrane covered the intra-laryngeal operated area.

April 23.—A smooth red polyp the size of a pea was noticed at the seat of the operated cord; this gradually diminished in size, and had disappeared at the end of May. When seen again in June, 1910, the patient had gained considerably in weight, and there was no return of the growth.

The following are quoted as points of interest in the case:

(1) Absence of subcutaneous emphysema and perichondritis; spontaneous union of the thyroid laminae, notwithstanding the absence of cartilaginous suture.

(2) Uselessness of dividing the cricoid (it was left untouched in this case).

(3) The post-operative appearance of a polyp, really due to fulguration, and which disappeared spontaneously. *H. Clayton Fox.*

E.A.R.

Beck, Oscar.—*The Auditory Nerve and Multiple Sclerosis.* "Monats. f. Ohrenh.," year 44, No. 10.

The account of the following two cases succeeded by the author's critique thereon form the subject of this article.

K. U—, aged thirty-one, a clerk, up till three months before had no illnesses (the case was shown at a meeting of the Austrian Otological Society, April 26, 1910). No misuse of alcohol or tobacco, no venereal infection. Wassermann reaction negative.

Three months before the patient began to suffer from occasional attacks of giddiness, which were especially associated with mental efforts and quite independently of any position of the head. There was no vomiting or tinnitus. He had no definite idea as to the apparent direction of the movement of objects; but it seemed to him that he heard worse in the left ear after these attacks.

Examination of the Ears.—Membrane normal on both sides. Very slight spontaneous nystagmus, rotatory and horizontal, to both sides, definitely stronger to the left (the diseased side). On looking upwards and downwards vertical nystagmus, but not constant. On looking directly forwards no nystagmus but convergent strabismus.

On the right side normal appreciation of sound, normal labyrinth reaction.

On the left side total deafness (with Bárány's noise apparatus). Absolute failure of response to the caloric test with water at 45 degrees. Duration of the after-nystagmus with rotation one third (? of that on the right side).

During irrigation of the right (sound) ear with water at the body temperature and the patient standing he fell always towards the left whatever the position of the head.

With Romberg's test he fell always towards the left, unaffected by any alteration in the position of the head.

Patellar reflexes both sides increased and marked inco-ordination in the finger-nose test on both sides. Otherwise reflexes and nerves normal. Ocular fundus both sides normal; paresis of the abducens and spastic convergence on both sides.

The patient was examined again in three days, when it was found that with Bárány's noise apparatus he could hear conversation at half a metre on the left side. Syringing the left ear with water lower than the body temperature evoked strong rotatory and horizontal nystagmus to the right, and with water at 45 degrees nystagmus of the same type to the left, accompanied by reaching and falling towards the left independently of the position of the head. No changes were noted in the course of an observation extending over seven weeks as regards the nerves or eyes. On six occasions the cochlear and vestibular portions were completely reactionless, and four times no pathological changes could be detected apart from the depreciation of the range of hearing. The intensity of the nystagmus remained unaltered.

The second case was one of Prof. v. Wagner's, and for this the diagnosis lay between multiple sclerosis and cerebellar tumour.

F. H.— for seven months had been subject to occasional attacks of giddiness, tinnitus, and deafness. The giddiness was so severe that he often fell if he attempted to stand. Whilst lying down he felt as if the bed swung. Alteration in the position of the head had no influence on the giddiness, nor did any one position in bed seem more comfortable than another.

Examination.—The right eyeball was a little more prominent than the left; some tremor of the lid; no Graefe's sign. Corneal reflexes equal and active on both sides. No disturbances of vision. Fundus normal. Sense of smell depreciated on the left rather more than the right.

Seventh and fifth nerves normal. Tongue correctly protruded, but very tremulous. No paresis of the palate. Throat reflex normal. Tremor of the hands, but no ataxia. Patient swayed to either side on walking. Other reflexes active and equal, but there was definite ankle clonus, the duration of which and character were variable.

Ears.—Membrane normal both sides. Nystagmus in each direction on looking to the right and left; coarse horizontal and rotatory movements more marked towards the right (the diseased side) than the left. No nystagmus on looking directly forwards. On looking upwards or downwards definite vertical nystagmus, varying in intensity, but not constant.

Left ear: Hearing for all tests normal; Rinne positive, Weber to the left. Caloric response to both hot and cold water typical.

Right ear: Total deafness (tested with the noise apparatus); vestibular apparatus quite unresponsive to caloric and rotation tests.

Five days afterwards the examination was repeated. The condition in the left ear was unchanged. The right ear was still completely deaf, but the vestibular apparatus reacted to the caloric test in the usual way,

and whilst under the influence of this test and standing with the feet together the patient had a constant tendency to fall towards the right and backwards, independently of the position of the head or the direction of the nystagmus. A paresis of the movements of the eyes to the left was also noted.

The patient was examined every three to four days over some two months. The character of the ocular paresis varied very much; at times this affected the right and at times the left abducens, but there was never diplopia. The right ear remained throughout totally deaf. For half the examinations the vestibular apparatus reacted normally and for half was quite unresponsive. Vestibular nystagmus to both sides was always present, and its intensity appeared quite independent of the then condition of the labyrinth.

The differential diagnosis Beck considers lay between hysteria, cerebral tumour, and multiple sclerosis for both these cases. Hysteria could be dismissed, as the deafness was constant in one case and no other hysterical stigmata were detected, nor would the variability in response of the vestibular apparatus conform to this view. An intra-cranial tumour causing no other nerve lesions except a paresis of both external recti was inconceivable. The transitory affection of the labyrinth would seem to denote some involvement of the eighth nerve itself, and it was impossible to regard this as the result of some tumour causing no optic neuritis, and which gave rise to no other symptoms. Acute affections of both vestibule and cochlea due to a retro-labyrinthine origin were rare, and only occurred in fractures of the base, embolism, hæmorrhages, and leukæmia, but had also been referred to "polyneuritis cerebri Ménière-formis." Ruttin had laid it down as a rule that sudden disturbances affecting the cochlea with the vestibular apparatus remaining intact, and suddenly arising vestibular symptoms, the cochlear nerve being unaffected, were to be referred to some lesion situate proximal to the labyrinth, whilst sudden disturbances of both portions of the eighth nerve together were more likely to be due to some intra- rather than extra-labyrinthine cause. A case, however, of this observer's which had been diagnosed as one of cerebellar tumour had proved to be an isolated disease of the vestibular nerve caused by rheumatism, and had completely cleared up within fourteen days under salicylates. Cases of isolated affection of the vestibular nerve had also been recorded by Neumann and others which had proved to be dependent on herpes, lues, and ptomaine poisoning. Recurring attacks of total loss of function of both the cochlear and vestibular portions of the eighth nerve simultaneously, alternating with periods of complete restoration of their function, had hitherto not been recorded, but would, perhaps, best be explained as due to some lesion situate proximal to the labyrinth and most probably in or around the nerve-trunk itself.

In these two cases of the author's the varying conditions as to functional integrity and paresis would correspond well with a diagnosis of multiple sclerosis, as did also the disagreement between the objective examination and the slight subjective condition, as regards which phenomena an analogy could be found in the appearance of the ocular fundus in this disease, where blindness might exist with an apparently almost normal retina, or the vision only be slightly affected when a high degree of pallor was to be observed with the ophthalmoscope.

The direction of the tendency to fall, which was quite independent of the vestibular and Romberg's tests carried out together, was also important and remarkable. Bárány had elaborated the differential

diagnosis which these combined tests afforded as between labyrinthine and cerebellar disease at Budapest in 1909.

The explanation of the symptoms in these two cases was due to a lesion of Deiter's nucleus, as Bárány had pointed out.

The author then refers to the various connections which have been established between the fibres of the vestibular nerve, Deiter's nucleus, the cerebellum, the cerebellar nuclei and the cells of the spinal cord in support of the theory that lesions of the cerebellum may thus produce "atypical" response to the labyrinthine tests.

As to the greater intensity of the spontaneous nystagmus towards the diseased side in his cases Beck quotes the results of simultaneous irrigation of both ears as described by Ruttin. If the two normal labyrinths are stimulated in this way together with water under the body temperature the tendency is for the production of a nystagmus to each opposite side equally, with the result that the one counteracts the other and no nystagmus occurs. If, however, the function of one labyrinth be impaired then the effect on the healthy side predominates and a nystagmus towards the diseased side is the result. Further, Ruttin was able to satisfy himself as the result of these investigations that the fibres which connected the vestibular nucleus and cerebellum possessed a controlling faculty, and that thus if the function of the cerebellum were impaired, *e. g.* by the presence of an abscess or tumour, then this controlling action would be absent on that side, and thus a spontaneous nystagmus towards the diseased would result.

This clinical condition has already been described by Neumann and Bárány.

The response to simultaneous irrigation in these two cases was a nystagmus directed towards the diseased side. However, Beck says he must admit that the labyrinth on the diseased side certainly appeared impaired as regards the caloric test compared with that on the sound side by previous tests, yet apparently the spontaneous nystagmus in both cases was greater towards the sound side. Each vestibular nucleus must be regarded as having connections with the muscles of both eyes.

The fibres uniting the cerebellum with the vestibular nucleus have a controlling faculty, and therefore any lesion of these units on one side will result in greater freedom of the ocular muscles on the same side, and a spontaneous nystagmus to this, the diseased side, takes place. In both his two cases the author observed a stronger nystagmus towards the diseased side, and for this reason combined with the data as regards the tendency to fall described above, Beck concluded that he could diagnose a sclerotic plaque in the cerebellum in both cases, and in addition in order to explain the auditory lesion another plaque involving the nucleus of the eighth. Finally, in order to account for the varying and partial affection of the vestibular branch, Beck alludes to the already established fact that this portion is always the last to show signs of disturbance in cases of any injury or disease of the eighth nerve as a whole, and he would further consider that both cases fall into the same category, the one being in a more incipient and the other a later stage.

The article is certainly of great value as a record of a certain pathological syndrome, and should be of especial interest to the aural surgeon in the differentiation between labyrinthine and cerebellar disease, which is now no small portion of his *rôle*.

The subsequent history of these cases will be awaited with interest.

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