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**A CASE PRESENTING MÉNIÈRE'S SYMPTOMS ALONG WITH
FACIAL PARALYSIS.**

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ALTHOUGH Ménière's (1) classical case was described as long ago as 1861, there is still considerable confusion on the subject of Ménière's disease, and the term is frequently applied to any condition in which giddiness is associated with a lesion of the ear. It would probably be better to discard altogether the use of the words "Ménière's disease," but, if the term be retained, it should be kept for cases in which Ménière's symptoms appear in an apoplectiform manner. Ménière's triad is usually described as consisting of "noises in the ear, giddiness, and vomiting," but v. Frankl-Hochwart (2), to whose valuable monograph we wish to state our great indebtedness, includes under the heading of Ménière's symptoms—"deafness, tinnitus, giddiness, nausea, vomiting, cerebellar ataxia, nystagmus, cold sweats, fainting, and a feeling of pressure in the head." It cannot be too emphatically stated that this "disease picture" is merely that of a lesion of the membranous labyrinth or of the eighth cranial nerve, and that it should be associated with disease of the labyrinth, just as "tremor, rapid pulse, and exophthalmos" are associated with the condition of hyperthyroidism.

In what conditions, then, do we meet with Ménière's symptoms? The answer to this question involves an attempt at classification of diseases of the inner ear and auditory nerve, although it must be admitted that our existing knowledge is barely sufficient for this purpose: many pathological conditions affect the aural labyrinth in which no microscopic examination of the labyrinth has yet been made.

CONDITIONS WHICH GIVE RISE TO MÉNIÈRE'S SYMPTOMS.

- I. *Variations in Labyrinthine Pressure, or excessive movements of the labyrinthine fluid*, as produced by forcible syringing, heat, cold, violent inflation of the middle ear, loud sounds, slight injuries (insufficient to cause hæmorrhage), dancing, the motion of the sea or of a railway train, etc.
- II. *Electrical Stimulation*.
- III. *Vascular Congestion* (*e. g.* due to amyl nitrite or otitis media, etc.) or *Anæmia* (*e. g.* quinine, general anæmia, loss of blood).
- IV. *Hæmorrhage into Labyrinth*—

{	A. Traumatic.
{	B. Due to diminished air-pressure (caisson disease).
{	C. In bleeding diseases, notably leukæmia, pernicious anæmia, nephritis, and arterio-sclerosis.
{	D. In exanthemata (Politzer) (8).
- V. *Acute Inflammatory Conditions*—
 - A. Serous labyrinthitis.
 - B. Purulent labyrinthitis.
- VI. *Chronic Inflammatory Conditions*—
 - A. Simple chronic inflammation in chronic middle-ear catarrh? Otosclerosis.
 - B. Tubercular.
 - C. Syphilitic: (1) congenital, (2) acquired.
- VII. *Neuritis of Auditory Nerve due to*—
 - A. Acute specific fevers.
 - B. Tuberculosis.
 - C. Syphilis.
 - D. Herpetic inflammation of ganglia (Polyneuritis cerebialis Menieriformis).
 - E. Toxic conditions—quinine, salicylates, tobacco, alcohol.

VIII. *Hæmorrhage into Auditory Nerve*—

A. In bleeding diseases (includes the present case).

B. In exanthemata.

IX. *Degeneration of the Auditory Nerve and Membranous Labyrinth*—

A. Chronic progressive labyrinthine deafness.

B. Occupational deafness.

X. *Tumours*—

A. Of acoustic nerve.

B. Of cerebello-pontine angle.

XI. *Neuroses*—

Pseudo-Ménière's disease (v. Frankl-Hochwart) in epilepsy, hysteria, neurasthenia, hemicrania.

Ménière's Disease is the apoplectiform occurrence of Ménière's symptoms, and is usually attributed to hæmorrhage into the labyrinth. Before accepting a case as a true one of Ménière's disease, Schwartz and Grunert (3) demand that the ear shall have been normal up to the time of the occurrence of the symptoms but Heermann (4) points out the difficulty of being sure that the ear was previously healthy, because even intelligent patients may not know that they are deaf in one ear. F. Alexander and Manasse (5) record a case in which a patient had five or six attacks of Ménière's symptoms, and, although the whisper was only heard by the right ear at one yard, the patient did not know that he had not got perfect hearing. In most cases ear disease has existed for a long time before an attack comes on of sufficient severity to cause the patient to seek medical advice. Heermann states that out of fifty cases twenty-seven had had previous disease of the ear. Of the eleven cases recorded by F. Alexander and Manasse, six showed more or less marked signs of progressive labyrinthine deafness.

Pathology.—Almost all the cases of sudden occurrence of Ménière's symptoms, in which a microscopic examination of the inner ear has been made, have been cases of leukæmia. The only non-leukæmic case reported by v. Frankl-Hochwart is that of Gruber (6)—this was a syphilitic patient who died of typhus fever: Gruber regarded the case as one of syphilitic affection, but v. Frankl-Hochwart thinks that the conditions present—vascular injection and blood-stained labyrinthine fluid (on macroscopic examination)—may have been due to typhus. In a paper recently published by one of us (J. S. F.) on the subject of congenital syphilitic disease of the ear, it was noted that in several cases the

deafness and other symptoms of Ménière's disease came on in a single night (29).

G. Alexander (7) claims even Ménière's original case as leukæmic; Ménière's patient was a girl, aged sixteen, who caught cold whilst driving during her menstrual period; death occurred five days after the onset of the inner ear symptoms, and during these days the temperature was raised: at *post-mortem examination* red plastic exudation was found in the canals and, to a slight extent, in the vestibule; the cochlea was free; the brain and spinal cord were normal; no *microscopic* examination of the inner ear was made.

In case 13, recorded by F. Alexander and Manasse, there was, however, no trace of leukæmia. The case was that of a man, aged fifty-two, who suffered from chronic progressive labyrinthine deafness with typical Ménière's symptoms a short time before death. On microscopic examination Alexander and Manasse found recent multiple hæmorrhages in the *ramus cochlearis* and *vestibularis*; the patient died of hæmorrhage into the left lateral ventricle. In addition to the hæmorrhages in the ear, atrophy of Corti's organ and of the spiral ganglion were present. There was no facial paralysis in this case.

Our case supports the view of F. Alexander and Manasse (8) that Ménière's symptoms may come on in an apoplectiform manner in non-leukæmic cases: we must note, however, that our patient suffered from chronic (senile) progressive labyrinthine deafness and also from Eustachian obstruction on the left side.

Lucae (9) states that in cases of chronic aural sclerosis Ménière's disease may come on suddenly without apparent cause: the patients only seek advice for the sudden attack.

Hillairet (10) was the first to point out that Ménière's symptoms might be caused by a lesion of the eighth nerve.

v. Frankl-Hochwart (pp. 13 and 14) records the clinical notes of two cases of Ménière's disease in which there was paresis of one half of the face: the second case died, but there is no mention of a microscopic examination of the ear. Similar cases are recorded by Kauffmann (11) and Hammerschlag (12). We have been able to trace the following cases of leukæmic deafness with Ménière's symptoms in which microscopical examinations of the labyrinth were made: Alt and Pineles (18) (1 case), G. Alexander (7) (15 cases), Steinbrugge (19), Mott (20), Lannois (21), Parkes-Weber and Lake (22), Schwabach (23), Politzer (8), Kock (24), and Finlayson (26). Manasse (25) examined the inner ear from thirty-

one cases of nerve-deafness, and found two with evidence of labyrinthine hæmorrhage in addition to the usual degenerative changes. Moos (27) records the case of a syphilitic patient in whom Ménière's symptoms were engrafted on existing ear disease. Microscopical examination showed periostitis of the vestibule and small-cell infiltration of the membranous labyrinth. Haug (28) reports a tabetic case in which the acoustic nerve and ganglia were affected. Moos (13) and Steinbrugge record a case of senile dementia in which hæmorrhagic pachymeningitis was found at *post-mortem*: the patient had frequently suffered from giddiness. Evidences of past hæmorrhages were found in the facial canal and also between the bundles of the cochlear and vestibular nerves. Pigment was also present in the connective tissue of the membranous labyrinth. In a similar case previously recorded the same writers found, in addition to evidences of old hæmorrhages, thickening, dilatation, and, in places, obliteration of arteries of labyrinth. Both these patients had suffered from hallucinations of hearing.

Ramsay Hunt (14) has described a syndrome characterised by herpes zoster oticus facialis, or occipito-collaris, with facial palsy and auditory symptoms. The same condition had previously been described by v. Frankl-Hochwart under the title of "Polyneuritis Cerebralis Menieriformis," and by numerous other writers. In one case Ramsay Hunt (15) demonstrated sclerosis of the nerve of Wrisberg on microscopical examination.

PRESENT CASE.

A. M'R——, male, piermaster, aged sixty-five; patient suffered from measles and typhoid as a child, and for the last few years from rheumatism and from left inguinal hernia; *no history of syphilis*; his left eye was removed thirty years ago; patient stated that he had never suffered from deafness up to the time of the last illness; father and mother died of old age, one brother of cancer and one sister of "water in the head."

There has been some difficulty in getting an accurate history of the case, but after extended inquiry we have arrived at the following account, which may be accepted as correct:

On December 1, 1907, he had a long day of exposure to cold on the pier, but went to bed at night feeling well: the following morning, December 2, 1907, he woke up suffering from extreme giddiness and from deafness and noises in the left ear; the left side of his face was paralysed; no history of vomiting was obtained; patient

stated that giddiness was the worst symptom of all; he also complained of pain in the head and limbs, and did not leave his bed for a week; while in bed he sometimes felt as if surrounding objects were moving around him.

When he did get up he had to hold on to various articles of furniture in order to get about the house; he states that he tended to fall to the right side—the side opposite to the ear lesion.

Towards the end of December, 1907, the deafness got worse.

Patient's doctor was not consulted till January 6, 1908, and patient was not examined at the Royal Infirmary till February 11, when he was seen by Dr. Logan Turner at the Ear and Throat Department at the request of one of us (A. B.). Dr. Turner's notes are as follow: Tympanic membranes are both slightly indrawn, but are otherwise normal. On the right side the watch is heard at two inches, but on the left it is not heard even on contact with the auricle. Forced whisper heard by right ear at two feet and by left ear at one foot. All tuning-forks heard by air-conduction by left ear. Rinne's test positive on both sides. On inflation with the catheter air did not enter the left tympanic cavity—right side not tested. Patient can stand with his feet together and eyes shut without swaying, but he is unable to stand on either foot alone without tending to fall. Patient suffers from left facial paralysis, but can taste salt on the anterior part of the tongue on the left side. *Herpes auricularis* was not present: this is interesting, and must be taken along with the retention of the sense of taste on the same side of the tongue. As will be seen from the account of the microscopical examination of the inner ear, the hæmorrhage did not extend beyond the internal meatus, and did not involve the facial nerve in the aqueduct of Fallopius nor the geniculate ganglion.

The patient was admitted to Dr. Bruce's ward on February 18, 1908; on admission he stated that he was giddy, even when lying in bed, but that the giddiness was worse in the open air, especially when passing vehicles.

Examination.—Patient somewhat emaciated; complete left facial paralysis; left eyebrow and left corner of mouth are depressed; no response to the faradic current on the left side of the face; the affected muscles contract slowly to galvanism, but there is no alteration of the polar reaction; superficial and deep reflexes present and active; voluntary movements are weak, and hand grip is weaker on left than on right side; *arterial walls*

PLATE I

Vertical Section of Cochlea and Internal Auditory Meatus, showing Hemorrhage.

1. Hemorrhage beneath epineurium. 2. Epineurium. 3. Space between epineurium and dura.

Longitudinal Section of Artery in Internal Auditory Meatus.

1. Hemorrhage. 2. Thickened middle coat of artery.

Facial Nerve (in Fallopian Canal) passing above Cochlea (note absence of hemorrhage).

1. Facial nerve. 2. Space between epineurium and wall of canal free from hemorrhage. 3. Middle coil of cochlea. 4. Basal coil.

Seventh and Eighth Nerves in Internal Auditory Meatus.

1. Hemorrhage beneath epineurium of seventh nerve. 2. Thickened artery. 3. Hemorrhage around vestibular ganglion. 4. Vein.

TO ILLUSTRATE DR. ALEXANDER BRUCE AND MR. J. S. FRASER'S CASE PRESENTING MÉNIÈRE'S SYMPTOMS ALONG WITH FACIAL PARALYSIS.

PLATE II.

1. Vestibular ganglion. 2. Hæmorrhage.
3. Epineurium.

Vertical Section of Vestibule.

1. Membrane of round window. 2. Basal membrane (note absence of Corti's organ). 3. Perilymphatic space of vestibule. 4. Neuro-epithelium of anterior wall of utricle. 5. Branch of vestibular nerve to utricle. 6. Vessel. 7. Facial nerve. 8. Footplate of stapes. 9. Promontory.

Descending Portion of Facial Nerve in Canal of Fallopius.

1. Facial nerve. 2. Vessels.

Semicircular Canals, showing Absence of Hæmorrhage.

1. Membranous canals. 2. Perilymphatic space.

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thickened; slight rough presystolic murmur in mitral area; aortic second sound accentuated and reduplicated. *No evidence of leukaemia.*

Urine, specific gravity 1014; otherwise normal.

Lungs, both reveal extensive chronic tuberculosis.

Joints of hands swollen and painful.

The diagnosis made by one of us (A. B.) was that of neuritis of facial and auditory nerves in the internal auditory meatus; haemorrhage in this situation was also mentioned as a probable cause of the symptoms. In the *Review of Neurology* Drs. Bruce and Pirie write: "The absence of evidence of middle-ear disease and the retention of the sense of taste, and the associated deafness, giddiness, and facial paralysis, indicated that the lesion was probably situated between the side of the pons and the bottom of the internal auditory meatus."

Treatment.—Potassium iodide 10 gr. *t.i.d.*; galvanic electricity to left side of face.

Progress.—April 4, 1908: Giddiness and facial paralysis *in statu quo*.

April 9, 1908: Irritable dermatitis on legs.

April 10, 1908: Pot. iod. stopped; aspirine, 10 gr. *t.i.d.*

April 12, 1908: Patient still feels very giddy if he sits up in bed.

April 17, 1908: Patient allowed to get up; does not tend to fall to right as much as formerly. Constant current passed from mastoid to mastoid daily.

April 24, 1908: Patient sent to convalescent house; giddiness still present; he still suffers from rheumatism.

May 2, 1908: Patient died suddenly at convalescent house from syncope this morning.

Post-mortem examination held forty-eight hours after death.

Summary.—Atrophy of second, third, fourth, and sixth cranial nerves on left side. Fatty dilated heart. Chronic venous congestion of organs. Extensive chronic pulmonary tuberculosis. Sub-acute interstitial nephritis. Brain shows definite milky thickening of arachnoid over inferior surface of cerebellum and circle of Willis; this condition extends $1\frac{1}{4}$ inches in front of optic chiasma, and also to near the tip of the temporal lobe.

Drs. Bruce and Pirie (16) found a well-marked Nissl's *R'ac*tion à distance limited to the facial nucleus of the same side only and a small nucleus behind it; the hypoglossal nucleus and the nucleus of the third nerve on the same and opposite sides were intact—

thus showing conclusively that the facial nucleus is the only nucleus of the facial nerve.

Examination of Left Inner Ear and Auditory and Facial Nerves.—The left temporal bone was removed at the *post-mortem* on May 4, 1908, *i. e.* forty-eight hours after death; it was at once placed in 10 per cent. formalin, where it remained till March 25, 1909. The inner ear spaces were then opened (J. S. F.), and the petrous bone was prepared for microscopic examination according to Ruttin's (17) method. The inner ear was decalcified in 10 per cent. nitric acid and 10 per cent. formol for two months, the fluid being changed daily at first. The specimen was then washed for a week in running water, and placed in 70 per cent. spirit for a day or two; next transferred to 90 per cent. spirit for three days (changed) daily; then absolute alcohol for forty-eight hours (changed once); then absolute alcohol and ether for forty-eight hours (changed once); next thin celloidin for one month, and finally thick celloidin for one month. After the thick celloidin had hardened the superfluous parts were removed and the block cut in the vertical transverse direction, *i. e.* at right angles to the long axis of the petrous pyramid. In all, about 600 serial sections were cut—20 μ in thickness—and about 150 were stained with hæmalum and eosin or by van Gieson's method; owing to the want of fixation in Muller's fluid, and the prolonged soaking in formol, it was found impossible to get good results with the Pal-Weigert method. In spite of the fact that the temporal bone was only obtained forty-eight hours after death, it will be seen that the structures of the membranous labyrinth were well preserved. In forming an opinion as to the size of the hæmorrhage in the internal meatus and the condition of the auditory, vestibular, and facial nerves, it is necessary to remember the prolonged soaking of the specimen in formol solution for the period of nearly one year.

Briefly summed up, the result of the microscopic examination of the inner ear and auditory and facial nerves was as follows: The inner ear was almost normal; there was no hæmorrhage in the endo- or peri-lymphatic spaces of the cochlea, vestibule, or canals; the membranous labyrinth was also almost normal, as was the spiral ganglion; the neuro-epithelium of the utricle, saccule, and of the cristæ ampullarum was well preserved. In the lower turn of the cochlea Corti's organ was absent or degenerated. The mucous membrane of the middle ear was normal.

As will be seen from the result of Dr. Logan Turner's

PLATE III.

Three Scalae of Cochlea from Middle Coil.
1. Scala vestibuli. 2. Scala media (cochlear canal). 3. Scala tympani. 4. Epithelial cells covering stria vascularis. 5. Basilar membrane.

Spiral Ganglion of Middle Coil of Cochlea.
1. Cells of ganglion. 2. Scala vestibuli. 3. Scala tympani.

Corti's Organ from Middle Coil of Cochlea.
1. Outer pillar cell. 2. Inner pillar cell. 3. Membrana tectoria. 4. Reissner's membrane.

Corti's Organ from Middle Coil of Cochlea.
1. Nerve-fibre crossing tunnel of Corti.

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examination of the patient, the case was probably one of chronic progressive (labyrinthine) deafness.

In the internal meatus there was a considerable amount of hæmorrhage between the epineurium and the seventh and eighth nerves; this was most marked above the seventh nerve; there was no hæmorrhage between the dura mater and epineurium. The vessels in the internal auditory meatus were markedly thickened, and the muscular coat had undergone a hyaline change. The hæmorrhage did not extend into the Fallopian canal, and did not therefore affect the geniculate ganglion; the modiolus of the cochlea and the small canals for the vestibular nerves were also free from hæmorrhage. Reference to the reproductions of the photo-micrographs will demonstrate the pathological condition present better than a more detailed description.

In conclusion one of us (J. S. F.) would like to express his thanks to the Royal College of Physicians (Edinburgh) for permission to carry out the microscopic work in the laboratory of the college, and also to the Carnegie Trustees for their kindness in providing the photomicrographs and half-tone blocks.

REFERENCES.

- (1) MÉNIÈRE.—*Gaz. Méd. de Paris*, 1861.
- (2) V. FRANKL-HOCHWART.—“Der Menièrsche Symptomenkomplex,” A. Holder Vienna, 1906.
- (3) SCHWARTZE and GRUNERT.—“Grundriss der Otologie,” 1905.
- (4) HEERMANN.—*Zentralblatt f. Ohrenheilk.*, Bd. 55.
- (5) F. ALEXANDER and MANASSE.—*Zeitsch. f. Ohrenheilk.*, Bd. 55.
- (6) GRUBER.—*Lehrbuch der Ohrenheilk.*, 2 Aufl., 1881.
- (7) G. ALEXANDER.—*Zeitsch. f. Heilk.*, 1906; records fifteen cases of leukæmic deafness. In one there was an infiltration of the right auditory and facial nerves in addition to extensive hæmorrhage in both labyrinths.
- (8) POLITZER.—*Lehrbuch der Ohrenheilk.*
- (9) LUCAE.—“Die Chron. progress. Schwerhörigk.,” Berlin, 1907.
- (10) HILLAIRET.—*Mém. de la Soc. de Biol.*, 1861.
- (11) KAUFMANN.—*Zeitsch. f. Ohrenheilk.*, Bd. 28.
- (12) HAMMERSCHLAG.—*Archiv f. Ohrenheilk.*, Bd. 45.
- (13) MOOS and STEINBRUGGE.—*Zeitsch. f. Ohrenheilk.*, 1881, p. 102.
- (14) RAMSAY HUNT.—*Amer. Journ. Med. Sci.*, August, 1908.
- (15) ———. *Journ. of Nerv. and Ment. Dis.*, February, 1907.
- (16) BRUCE and PIRIE.—*Review of Neurol. and Psych.*, 1908, p. 685.
- (17) RUTIN's method.—*Verhandl. Oesterr. Otol. Ges.*, November 26, 1906.
- (18) ALT and PINELES.—*Wien. klin. Wochenschr.*, 1896, p. 849; showed that Ménière's symptoms may arise in a leukæmic case from infiltration of the acoustic nerve: the middle and inner ears were normal.
- (19) STEINBRUGGE.—*Deutsche. med. Wochenschr.*, Vereinsbeil., 1897. Inner ear spaces and acoustic nerve involved in the leukæmic hæmorrhages and infiltrations.

(20) MOTT.—*Med. Clin. Trans.*, vol. lxxxiii, 1900, found leukæmic infiltration in cochlea and canals.

(21) LANNOIS.—*Annal. des Mal. de l'Oreille*, etc., 1892; found extravasation of blood in vestibule and in canals undergoing organisation; new connective-tissue formation in the bony canals; cellular infiltration in scala vestibuli of first turn of cochlea.

(22) PARKES-WEBER and LAKE.—*Proc. Roy. Med. and Clin. Soc.*, 1900; found new formation of fibrous and bony tissue in the scala tympani and in the perilymphatic spaces of the canals.

(23) SCHWABACH.—*Zeitsch. f. Ohrenheilk.*, Bd. 31, S. 103. Fifteen cases of leukæmic deafness; five had apoplectiform attacks.

(24) KOCK.—*Ibid.*, Bd. 50, S. 431. Hæmorrhage in cochlea and canals.

(25) MANASSE.—*Ibid.*, Bd. 52; examined thirty-one inner ears from cases of nerve deafness, and found two with evidences of labyrinthine hæmorrhages in addition to degenerative changes.

(26) FINLAYSON.—*Brit. Med. Journ.*, December 31, 1908, p. 1925; records another leukæmic case with hæmorrhage in vestibule and first turn of cochlea.

(27) MOOS.—*Virchow's Archiv*, Bd. 69, S. 313. Syphilitic patient: Ménière's symptoms engrafted on existing ear disease; periostitis in vestibule; small-cell infiltration of membranous labyrinth.

(28) HAUG.—"Die Krankheiten des Ohres in ihren Beziehungen," etc., 1893. Tabetic case: the acoustic nerve-ganglion and accessory ganglia were affected.

(29) FRASER.—*JOURN. OF LARYNGOL., RHINOL., AND OTOL.*, August, 1909.

A NEW CONTRIBUTION TO THE OPERATIVE TECHNIQUE OF THE LABYRINTH.¹

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IN 1905, in our inaugural thesis, "The Surgical Anatomy of the Labyrinth," we showed how we should understand the opening of the internal ear in case of diffuse suppurative labyrinthitis. We then extolled the opening of the cochlea and of the anterior branch of the external semi-circular canal, and as the facial nerve passes parallel to this anterior branch, we constructed a protector in order not to injure it. The French school, despite Lermoyez's article in *La Presse Médicale* at Bordeaux in 1904, the French school, we say, does not stimulate research in this matter. The Viennese school, on the contrary, with Alexander, Neumann, and Bárány (1), has used every effort to unravel and make precise the somewhat delicate symptomatology of this organ. The first of all these

¹ Slightly abridged from the *Bulletins et Mémoires de la Société Française d'Oto-Rhino-Laryngologie*, 1909.