SOCIETIES' PROCEEDINGS

THE SCOTTISH OTOLARYNGOLOGICAL SOCIETY

THE EIGHTY-SEVENTH MEETING OF THE SOCIETY WAS HELD AT THE ROYAL INFIRMARY, DUNDEE, ON SATURDAY, NOVEMBER 23RD, 1963. THE PRESIDENT, MR. R. S. VENTERS, WAS IN THE CHAIR.

Dr. W. Taylor of the Department of Public Health and Social Medicine of the University of St. Andrews presented a paper on "Changes in Hearing Levels of Dundee Jute Weavers due to Loom Noise".

Summary

One-fifth of the population of Dundee is engaged in jute manufacture and noise levels in these processes show that all of them are near or above the damage risk criteria for hearing. The relation between impairment of hearing and years of noise exposure has been determined, using a female weaving population exposed to loom noise which has been constant for sixty to seventy years.

The results indicate that weaving noise levels around 100 dbs. cause permanent threshold shifts which are rapidly progressive up to 8-10 years. Thereafter the deterioration slows up but the 4,000 cycle notch, characteristic of acoustic trauma, widens and deepens, eventually cutting the top end of the speech range.

Audiograms of fifty retired weavers with an average noise exposure time of forty-six years, show threshold shifts of 25-35 dbs. at 250 and 500 cycles and 70-80 dbs. at 3,000 and 4,000 cycles.

A young weaver working in loom noise for a period of 5-10 years will show a threshold shift at the higher frequencies equivalent to the presbyacusis loss normally expected in a lifetime.

The President thanked Dr. Taylor for his interesting paper which emphasized the problem of noise in industry, now the subject of increased attention.

MR. GIBB spoke briefly of his observations of the effects of factory noise on patients who had undergone the stapedectomy operation.

"Many of us are carrying out stapes operations and I felt it might interest you to see some results of noise exposure in stapedectomized patients. The stapedius muscle is thought to have a protective action against the effect of loud sounds on the cochlea and, as you know, this muscle is divided in nearly all our stapes operations."

Four cases who had had the stapes operation and three controls were exposed to the effects of factory noise with a sound meter reading of 102 decibels for one hour. Audiograms were taken immediately before and immediately after exposure. In the control cases, all showed a marked hearing loss of about 40

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decibels in the 4,000 cycle range. In the otosclerotic patients the disease was bilateral and on the unoperated side there was found to be no change in the hearing following noise exposure, the otosclerotic process presumably protecting the internal ear. On the operated ear, however, there has been a marked hearing loss at 4,000 cycles, provided the hearing at that frequency was good before noise exposure. In many stapedectomized patients, however, there is frequently a high tone loss existing before operation, but sometimes produced as a result of the operation. If there is an existing high tone loss before noise exposure, there would not appear to be any additional loss following the exposure. If the hearing was good, however, in this region before exposure, the deafness produced does not appear to be significantly greater than that produced in the normal person. It would appear, therefore, that the action of the stapedius in prolonged noise exposure is negligible.

The patients on whom this test was carried out had stapes operations by different techniques including the Rüedi interposition technique, the Shea polyethylene strut method, and the House gelfoam and wire method. Although this is too small a series of cases from which to draw firm conclusions, the following are my impressions. (1) That many patients working in factories are already deaf to high tones. Many of these patients work for years in the factories and presumably the perceptive deafness developed before the otosclerotic process. These cases suffer no further loss as a result of noise exposure after stapedectomy. (2) Stapedectomized patients do not appear to suffer any greater effects from noise exposure than the normal person. This is thought to be due to the fact that the stapedius muscle cannot remain in tonic contraction for prolonged periods and that the stapedius reflex is only effective with sudden loud noise. It therefore would appear to have no great importance in prolonged exposure to noise in factories. (3) In some cases where the otosclerotic process has preceded the exposure to noise in a patient working for years in a factory, no high tone loss is present before operation. These patients are liable, therefore, to get high tone loss as would a normal individual. The audiograms of one lady taken eighteen months after operation show that she has no significant high tone loss but she has been using Glass Down in the affected ear. It would seem, therefore, that some cases who have had stapedectomy performed can in fact be adequately protected by Glass Down in the operated ear.

After these papers the members discussed an interesting selection of cases presented by Mr. Gibb, Mr. Mitchell, and Mr. Mowat. The following were of particular interest:

Case III. Anosmia following minor nasal operations.

This patient had her left inferior turbinate trimmed and infracture of the middle turbinate in *June, 1960*. Local anaesthesia was by postural instillation of Cocaine drops with Adrenaline. Anosmia has been almost total since operation.

Mr. Gibb remarked that this was one of seven cases which he had encountered in all of which Cocaine diluted to 5 per cent. with Adrenaline had been instilled. They all had initial anosmia, some later developed parosmia and most have been left with an impaired sense of smell. No further cases had been met with since Xylocaine was substituted for Cocaine.

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Case VIII. Stapedectomy. Patent Cochlear Aqueduct.

The patient had a left stapedectomy performed in *January, 1963.* The stapes was fixed. Rocking the stapes mobilized the whole footplate and the intact stapes floated out on a tide of perilymph. The flood was stemmed with great difficulty. A vein graft was quickly prepared and applied, and over it a tight pack of Sterispon was placed between the graft and the long process of the incus. The drumhead was replaced and the meatus packed. There was no further cerebro-spinal fluid otorrhoea. The pack was removed a week later. The patient was hearing well and the drumhead was intact.

Mr. Mitchell said that patent cochlear aqueduct was reported following stapes mobilization by Palva (1962) and following stapedectomy by Gardy and Goodwin (1962), but he had not encountered it previously. He had expected that it would be necessary to expose the middle ear again but this had not been required since she has surprisingly good hearing, presumably due to formation of a fibrous band or adhesions between the vein graft and the incus.

Case XII. Glomus jugulare tumour presenting as acute mastoiditis.

This patient gave a history of discharge from the left ear for one year, pain for a week, and swelling in front and above the ear of two days' duration when she was first examined in *October, 1961.* Cortical mastoidectomy performed the following day revealed an extensive cellular mastoid full of creamy pus and granulations, the pathological report on which was non-specific granulation tissue only. Severe bleeding was encountered, transfusion with two pints of blood being necessary.

Ten days later the mastoid cavity was re-explored and converted into a modified radical cavity. Bleeding was again excessive. An extensive erosion over the lateral sinus was found and granulations were present in the tympanum. Transfusion was again required. Two months later the ear appeared to be healed.

In *March, 1963,* the patient was admitted to hospital because of severe haemorrhage from the left ear. The cavity was full of granulation tissue, biopsy of which caused further severe bleeding. X-ray of the petrous bone showed extensive destruction of the left petrous bone extending to the apex. The pathological report described highly vascular tissue with general character of a glomus jugulare tumour.

In *May, 1963,* the patient was given a course of radiotherapy with the linear accelerator. Four months later the patient's general condition had improved and the cavity had healed with atresia.

Mr. Mowat stressed the fact that the initial appearance was essentially that of a pyogenic mastoiditis but with the odd feature of rather extensive granulations for a relatively short history. Retrospective examinations of the granulation tissue from the original biopsies had not resulted in any change of opinion as to their nature. A further question to be considered was whether or not further surgery should be undertaken at this quiescent stage to try to remove the remains of the temporal bone. Mr. Baillie said that he had no evidence of the susceptibility of these tumours to cytotoxic agents but he thought that their considerable vascularity might render them suitable for such treatment.

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Mr. Thomson wondered how much mitosis occurred in a glomus tumour. Dr. Park did not believe that the diagnosis had been missed in the earlier biopsies. He thought that the neoplasm itself had initially been surrounded by an unusually vascular zone composed mainly of inflammatory granulation tissue.

Case XIII. Specific Deafness.

A male patient aged 51 years complained of increasing tinnitus, unsteadiness and deafness when examined in *March, 1959.* Deafness was of perceptive type with normal drumheads. Caloric tests gave no response to cold water. The blood Wassermann Reaction was positive but no significant abnormality was found in the cerebro-spinal fluid. Treatment given with large doses of Penicillin for one month produced no real improvement.

Patient was not seen again until *August, 1962,* when deafness was increasing and tinnitus becoming intolerable. Unsteadiness was not troublesome. Treatment recommenced with 2 mega units of Penicillin intramuscularly daily for a month, on alternate months, until the beginning of October.

Hearing has improved and tinnitus, though still present, does not worry the patient. Mr. Mowat said that he was impressed by the improvement in the patient's general condition. The extreme tinnitus had made him a potential suicide. His hearing improved beyond expectation and his vestibular function is apparently recovering.

Case XXIII. Mucocele of Antrum (?)

This man of 47 was complaining of nasal catarrh and obstruction for five months, but purulent discharge had ceased following antibiotic treatment five weeks previously.

Examination showed a pale polyp in the left middle meatus and X-rays revealed marked mucosal thickening in both antra. The polyp was removed and bilateral antrum puncture yielded thick mucus from the right side; much resistance but a clear return from the left side. A month later both antra were clear but resistance persisted on the left side. After a further two months there was no change and left radical antrostomy was performed. The sinus was full of thick, greyish, tenacious, stringy material which was extracted in one piece. The lining mucosa which was pale and thickened was also removed. Recovery was uneventful.

Mr. Mitchell said that he had been expecting to find a polyp present in the antrum and had been puzzled by the nature of the material which he found. He wondered if it could be termed antral mucocele resulting from the sterilization by antibiotics of the mucopurulent content accompanying a previous suppurative sinusitis. In reply to Mr. Russell he said that no fungal bodies could be found, the material consisting of mucus and fibrin with a few epithelial cells. He had encountered three similar cases within a period of five months.

REFERENCES

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