SOCIETIES' PROCEEDINGS

THE SCOTTISH OTOLARYNGOLOGICAL SOCIETY

THE EIGHTY-SIXTH MEETING OF THE SOCIETY WAS HELD AT THE ROYAL INFIRMARY, GLASGOW, ON SATURDAY, MAY 25TH, 1963. THE PRESIDENT, MR. R. S. VENTERS, WAS IN THE CHAIR.

Dr. I. A. Clarke, of the Anatomy Department, Glasgow University, presented a paper on "The Localization of Tetracycline in Otosclerotic Stapes".

Summary

Since the tetracyclines are capable of acting as intra-vital, non-toxic stains of mineralizing bone, and since they fluoresce upon exposure to ultra-violet light, stapes were obtained from patients with otosclerosis who had received terramycin.

Twenty-eight foot-plates and their superstructures were examined after they had been removed from patients in whom the clinical diagnosis of otosclerosis had been confirmed macroscopically at operation. Subsequently, the stapes or the various portions of the bone, were fixed in alcohol, dehydrated in acetone, and embedded in a mixture of Ethyl and N-Butyl methacrylate. Finally, ten micron thick sections of undecalcified bone were cut upon a Jung microtome, type K, and submitted to fluorescent microscopy. Microphotographs were taken of the areas of bone revealing tetracycline fluorescence using Kodak Ektachrome High Speed Colour Film, with an exposure of 2 minutes.

In this investigation seven of the twenty-eight stapes examined revealed fluorescence, which was localized entirely in the anterior portion of the footplate. The tetracycline, which had been deposited in the newly mineralized bone, fluoresced a golden-yellow colour, revealing the patterns and outlines of the mineralizing areas in the active stage of otosclerosis.

In addition an estimate of the degree of otosclerotic activity could be obtained by observing the extent of fluorescence. It was found that footplates taken from younger patients showed larger areas of fluorescence, while the footplates from older patients revealed smaller, discrete fluorescent patterns, indicating less active otosclerotic foci.

Discussion of Dr. Clarke's Paper

A discussion followed Dr. Clarke's paper in which Mr. Doig observed that fluorescence had occurred in stapes removed from four of his patients. The first patient was aged 51 years, deafness having started at the age of 38. There

https://doi.org/10.1017/S0022215100061752 Published online by Cambridge University Press

was widespread otosclerotic change with a small proportion of thin footplate. Another patient, aged 29, with deafness of 12 years duration, had a thin footplate. The next case was a girl of 19 years with a history of 4 years deafness who had overall thickening of the footplate and the anterior crus. The fourth patient, aged 48, who had been deaf for 18 years, had a very thin footplate.

Dr. Hood described the operative appearances in two patients. Both patients were females, aged 35 years and 30 years. The former had a thin blue-coloured footplate, whilst the latter had a thick footplate with longitudinal ridges of bone and a frosted-glass appearance between the ridges.

The Chairman asked if the degree of fluorescence was related to the thickness of the footplate. Dr. Clarke replied that he thought the degree of fluorescence was related to the age of the patient rather than the thickness of the footplate. The most marked fluorescence was seen in the younger patients. The older the patient, the less active was the otosclerotic focus.

Mr. Dixon said that further investigation required to be done on this subject, more material was necessary, and patients might be given short courses of tetracycline at certain determined intervals before operation. Dr. Clark thought that by giving these short courses of tetracycline the rate of bone deposition could be determined in a given period. This could be the first method available for measuring the rate of bone deposition in otosclerosis.

Mr. Dixon and Mr. Doig presented 14 patients illustrating difficulties and dangers encountered in the surgery of the stapes. Points giving rise to discussion included dislocation of the incus, fixed incus and malleus, loss of footplate within the vestibule, perforations of the tympanic membrane, and post-operative otitis media.

Mr. Dixon said that he felt it was important to emphasize the failures in this type of surgery. In a series of 48 cases the hearing in three ears had been made worse. In two of these the drill had been used on the footplate. He now tried to avoid the use of the drill although he agreed with the Chairman that there must be occasions when the drill is necessary.

Mr. McLay thought that the dangers of drilling have been exaggerated to the extent even of increasing the hazards of surgery. In an analysis of his cases where the drill had been used he found that 3 per cent. were worse, which, he thought, was a fair proportion because the drilled cases were the more advanced and difficult cases of otosclerosis.

Mr. Gibb observed that replacement of a displaced incus may produce a good hearing result though it may not be maintained. He also commented on the use of endaural incisions which in his experience could be productive of perforations of the drumhead by reason of stretching of the tissues. This could be prevented by an incision a few millimetres outside the drumhead.

On the subject of the floating footplate the consensus of opinion was that a very bad result could be expected. In one such case he recalled a patient who suddenly became completely deaf in the operated ear 18 months later. In another case a very thick footplate disappeared into the bottom of the vestibule but was successfully removed, after enlarging the oval window, by applying the tip of a fine suction tube to it and turning on the suction.

Mr. Venters suggested that loss of the floating footplate could be avoided by keeping some of the mucosa intact. The same thing applied to a fragment

https://doi.org/10.1017/S0022215100061752 Published online by Cambridge University Press

of thin footplate breaking off. The mucosa could be cleared when the footplate had been removed.

Mr. Doig asked for the advice of members on the management of a boy of 7 years whose deafness was thought to be due to otosclerosis. He was not certain that stapedectomy was advisable in a child of that age. Mr. Venters advised stapes mobilization in the first place. He had had a first class result in a child of 12 years.

Mr. Baillie thought that it was of the greatest importance to relieve a child's deafness during the school years and it seemed reasonable to operate on one ear rather than delay the operation until early adult life as had been suggested. He reported the case of a boy of 13 years who had a hearing loss of 70 db. on both sides. Following operation on one ear there has been closure of the air-bone gap and the boy has the possibility of having nearly normal hearing for the remainder of his school days, and for the important period when he is looking for employment.

Mr. Venters referred to Mr. Doig's case of post-fenestration stapedectomy in which there was improvement in hearing but an air-bone gap of 20 db. remained. In his experience these cases have been total failures. Mr. Mitchell thought that the result in this case was not unsatisfactory in the absence of an ossicular chain.

Dr. Brownlie Smith congratulated Mr. Dixon and Mr. Doig on presenting these cases. He had seen many reports of stapes operations and the characteristically successful results, but very seldom had he seen an account of the difficulties. Displacement of the incus, he thought, was likely to interfere with its blood supply and lead to necrosis later. In all cases on which he had operated recently his practice had been to keep the stapedius tendon and incudo-stapedial joint intact in the belief that much of the blood supply of the head of the stapes passes along the tendon. After removal of the footplate the crura are placed in a fat graft over the oval window. Where the head of the stapes had been accidentally dislocated, the pull of the stapedius muscle caused difficulty in replacing the head, but by retaining the muscle and the stapes superstructure the results had been extremely good.

The following cases also caused discussion:

Case XXVI: This patient sustained a fracture of the skull in 1961 resulting in anosmia. Two months later he had recovered one subjective smell sensation but was unable to differentiate substances. Everything smelt the same. In recent months he has been able to recognize various substances intermittently, although their smell is not as he knew them before.

Mr. Harper said that he had always understood that anosmia resulting from a fractured skull was permanent but in this case olfaction seemed to be returning through parosmia to normal sensation.

Mr. Gibb recounted his personal experience of parosmia following a submucous resection of the septum which was performed under local anæsthesia administered by postural instillation. Recovery was gradual over a period of 3 months. He felt that there was some similarity between this case and himself, the symptoms being due to the production of œdema in the olfactory area.

https://doi.org/10.1017/S0022215100061752 Published online by Cambridge University Press

Dr. Smith said that he knew of at least two other cases of complete anosmia which were considered to be attributable to this method of nasal anæsthesia.

Case XXXI: Carcinoma of the œsophagus. The patient, male, aged 58 years, had severe dysphagia due to an inoperable squamous cell carcinoma involving the middle third of the œsophagus. A Celestin endo-œsophageal tube was inserted in *November, 1962* and a course of palliative cobalt radiation given 1 month later.

Mr. Doig said that this method of treatment had been in use for some time. Results with the Celestin tube were better than those attained previously with rubber or Portex tubes. It had been possible for more patients to return home, swallowing ordinary food, and their general well-being was, in some cases, much better for several months.

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