

CLINICAL MEMORANDA.

STREPTOTHRIX COLONIES IN THE LACRIMAL CANALICULUS: REPORT OF A CASE, WITH A NOTE ON DIFFRACTION SPECTRUM EXAMINATION.

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For over five years a woman of sixty-five had complained of watering of the right eye. This symptom was accompanied by the development of a swelling at the inner corner of the right lower lid. Latterly, a certain amount of discharge appeared on pressure. She lived in an outlying district and, owing to the restricted travel conditions of the war, did not seek advice until June, 1945.

At a casual glance, the patient appeared to have a large meibomian cyst (Fig. 1) but, on pressure over the canaliculus, pus exuded from the punctum. This was bacteriologically sterile. After this matter had been evacuated, the semi-translucent and distended canaliculus transmitted a feeling as of the presence of small shot. A linear horizontal incision was made along the palpebral aspect of the swelling. Nine small faceted stone-like masses were removed (Fig. 2). They varied in size between 2.0 mm. and 3.0 mm. in the largest axis. Microscopic examination of a crushed specimen showed the typical mycelium of streptothrix.

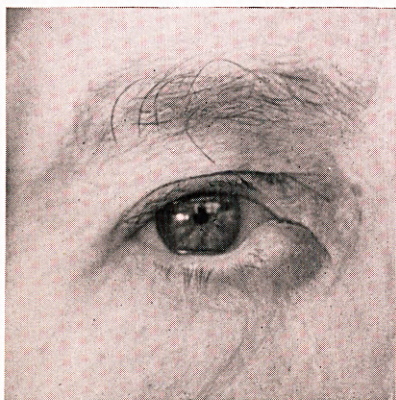


Fig. 1. Original condition of right lower lid.

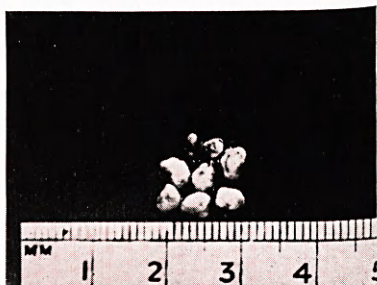


Fig. 2. The nine faceted concretions.

Owing to the long duration of the complaint and the faceted appearance of the colonies, it was thought that they might be calcified. In order to establish this point, the x-ray diffraction spectra were studied.

The basis of this method of investigation was established in 1921 when Max von Laue showed that the range of atoms in crystals acts as a diffraction grating to x-rays. The rays are scattered by the crystals and this provides an accurate means of determining the details of crystal structure. A commonly used method of analysis of the atomic structure of crystals is by rotating a mass of less than a millimetre about an axis at right angles to a narrow incident beam of x-rays. The diffraction of the beam is recorded photographically on a flat film and forms a record peculiar to the crystal structure.

Two models of a colony were made in cellulose acetate, one of which contained 10 per cent calcium carbonate. Photographs were taken of one colony, the cellulose acetate blank and the cellulose acetate containing 10 per cent. calcium carbonate. The diffraction pattern given by the specimen showed no evidence of the presence of crystalline calcium carbonate (Figs. 3, 4 & 5). The breadth of the diffraction rings indicated that colloidal matter, probably organic, was the main constituent, although the presence of a small amount of colloidal calcium could not be excluded.

The patient made an uninterrupted recovery and the wound in the canaliculus healed completely. She was kept under observation for a few months but her attendance was irregular, owing to the distance from hospital. In January, 1947,

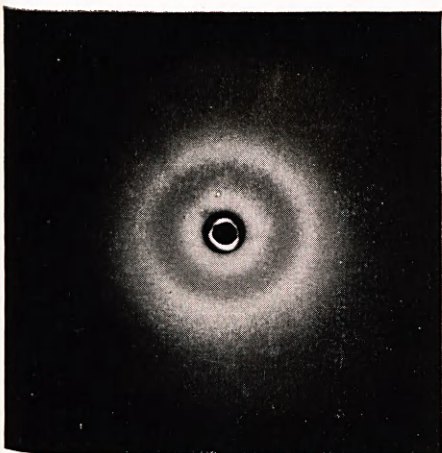


Fig. 3. Diffraction spectrum of streptothrix colony.

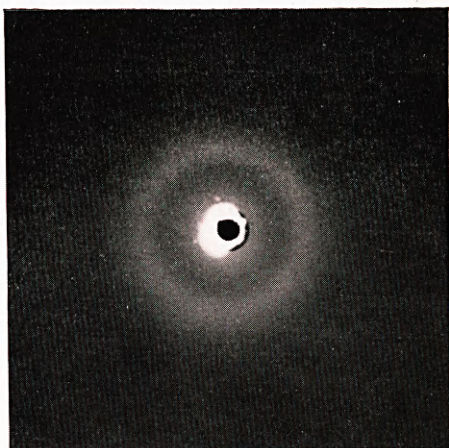


Fig. 4. Diffraction spectrum of cellulose acetate blank.

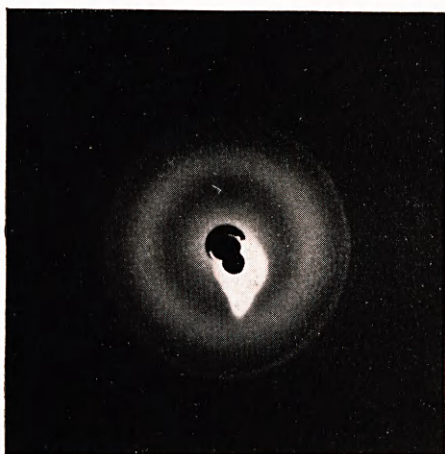


Fig. 5. Diffraction spectrum of cellulose acetate + 10% calcium carbonate.

she again complained of the eye watering and a fusiform colony was removed from the right upper canaliculus through a horizontal incision similar to that employed in the lower. On examination, this proved to be an almost pure culture of streptothrix. Recovery was uneventful and both tear-ducts were patent, being syringed with penicillin, 2,500 units per ml., three times daily for three days. She has had no further trouble of any kind and reports herself as being free from all symptoms in September, 1949. There was no evidence whatever of tissue infiltration or gross reaction at any time.

The frequency with which this condition is found in clinical practice probably varies with the industry of the clinician. It is likely that many patients complaining of a watering eye are cured by syringeing through the tear-sac and have such a colony washed away into the nasal passages. Busina (1948) has reported a patient who had twenty-seven concretions removed. She was ultimately cured by excision of the tear-sac. In my experience, it is relatively rare to see the fusiform type found in

my patient and extremely rare to remove multiple faceted colonies. Consequently, it appeared to be of interest to record the negative finding that these things which look like stones are not in fact calcified. A further point of interest in this patient was that there were several small yellow concretions embedded in the upper eyelid. These were of the type commonly found in middle-aged people. Four of them were removed and examined microscopically for the presence of streptothrix, with negative result.

Acknowledgement.

The diffraction pattern of the specimen was investigated by Dr. J. M. Dawson in the Chemistry Department of the University of Glasgow, and the bacteriological tests were carried out by Dr. W. B. Kyles in the Western Infirmary of Glasgow. I am indebted to them both and also to my technician, Mr. John Watt, for the preparation of the photographs.

Reference.

Busina, K. (1948). *Cesk. Opthol.* 4 : 158.