Foreign bodies in the paranasal sinuses

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SUMMARY

Six cases of foreign body in the paranasal sinuses are presented, with a brief reference to the earlier literature.
In three cases the foreign body had entered the paranasal sinuses in connection of firearm accidents. In two cases stones were found after explosion injuries in paranasal sinuses. The sixth foreign body was impression material, which had entered the maxillary sinus through an oroantral fistula. It was not seen in radiographs taken preoperatively. In one case there was found an aspergilloma, too. The foreign bodies in the paranasal sinuses are so rare that they readily can be overlooked in differential diagnosis and treatment thus is delayed.

FOREIGN bodies in the paranasal sinuses are rather rare and therefore only series of a few cases have been reported.
In the maxillary sinuses calculus formation (Chadwick, 1971), as well as shell fragments and bullets have been encountered mainly after war injuries (Birnmeyer, 1963). In connection with accidents (Sinha, 1968; Kukreja, 1969) and dental care (Killey, 1964; Shelton, 1964; Chavanne, 1969) foreign bodies of the most varied kinds may enter the maxillary sinus. The frontal sinus (Slatin, 1969; Nath, 1971) and the ethmoidal sinuses (Ohta, 1963) are not so common sites of foreign bodies. In the last years a few foreign bodies in the sphenoidal sinus have been reported (Harris, 1968). Fungus infection has very rarely been diagnosed in association with foreign bodies in the paranasal sinuses (Jiminez et al., 1968), even if actinomycosis (Pfander and van Marwyck, 1964, aspergillosis (Maspetiol et al., 1963) and phycomycosis (La Touche et al., 1963) are receiving increased attention. The present paper describes six cases of foreign bodies in the paranasal sinuses diagnosed from an uptake area of 600 000 people during years 1960-1969.

PRESENTATION OF THE MATERIAL

1. The patient, a 16-year-old-boy, had been hit above the left eye by a bullet from a miniature rifle. In the temporal region there was a perforation, which seemingly was the wound of exit. The vision of the left eye became slightly impaired although there appeared no injury to the eye. About two months later

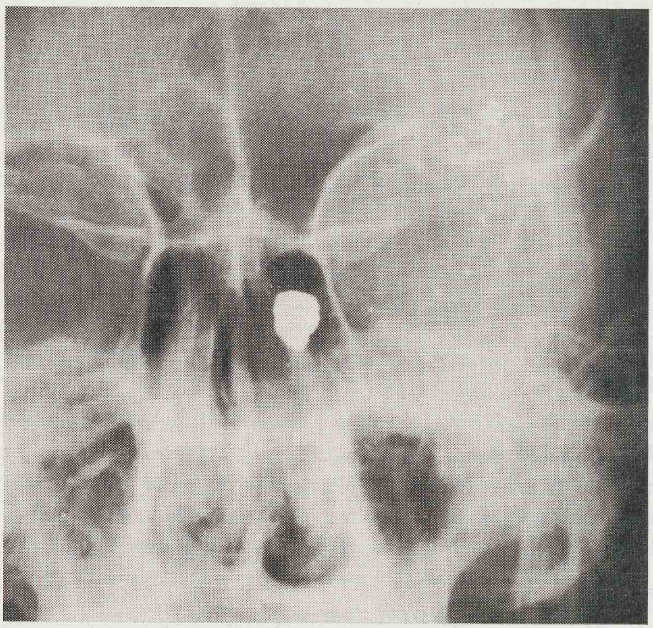

Figure 1. A large piece of a miniature rifle bullet in the left ethmoidal region and numerous small pieces in the orbit.

the patient was sent to the central hospital. The only clinical findings were the lowered vision of the left eye and scartissue in the eye ground. In the upper part of the left fossa nasalis there was a mucosal thickening. The finding conspicious in radiograph was a large metal foreign body in the region of the middle ethmoidal sinuses and numerous smaller pieces of a bullet (Figure 1). The largest foreign body was removed. The recovery was uneventful, but the vision remained permanently impaired.
Comment: The bullets of small-calibre firearms shatter when they hit bone and the wound of exit may therefore have been made by a fragment in a direction different from the assumed trajectory of the bullet.

2. The patient was submitted to examination because of hearing problems. Skull X-ray unexpectedly revealed a metal foreigh body in the right ethmoidal sinus (Figure 2). So far the patient has not been interested in having the bullet removed.
Comment: Air rifle bullets are made of lead-containing alloy, they do not rust and the irritation to the tissues is slight. The impetus of an air rifle is so low that the bullet does not shatter even upon with bone. They may be harmless for a long time. In this case there is nearly 30 years from the accident.

3. The patient was a construction worker who during rock blasting was hit in face by stones. Primary X-ray was considered to show a fracture in the frontal region. Gradually the patient got headache and vertigo which became worse at

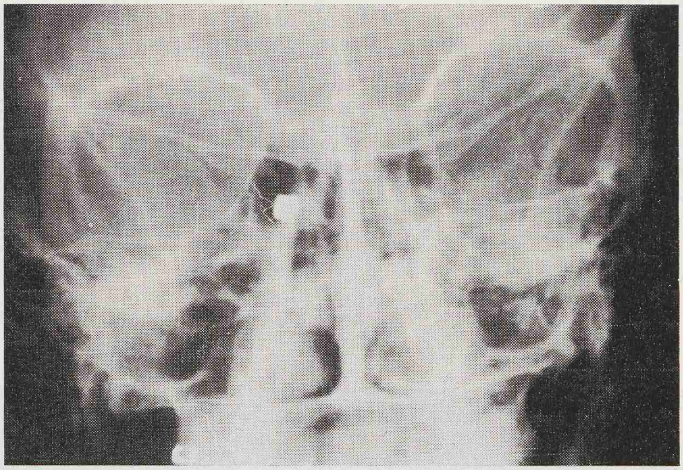

Figure 2. Air rifle bullet in the right ethmoidal sinuses.

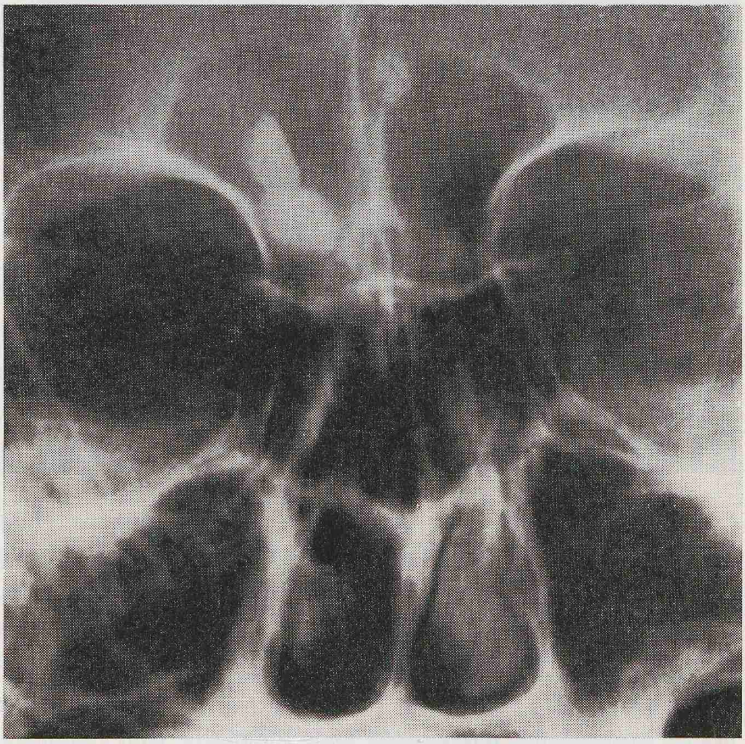

Figure 3. Two stones in the right frontal sinus.

work. Three years later he had a fit that was interpreted as epileptic, the patient was sent to neurological examinations. Epilepsia could not be confirmed at central hospital, but in new skull-X-rays in the area of the right frontal sinus there was a density resembling a double osteoma (Figure 3). The patient was sent to

otological outpatient department. A hard, tender nodule was palpable above the right eye. At operation by osteoplastic technique two stones were found to be impected in the orifice of the nasofrontal duct.
Comment: In connection with frontal fracture a stony foreign body was overlooked and interpreted as an osteoma in the later radiographs.

4. The patient was a stone worker, who in work accident get multiple traumas. He was treated at local hospital and sent to central hospital for foreign bodies in both eyes. No skull-X-ray was taken in the first hospital. Quite unexpectedly a tightening, resembling a lump of sugar, was found in the right antrum maxillae. It was a piece of stone (Figure 4).

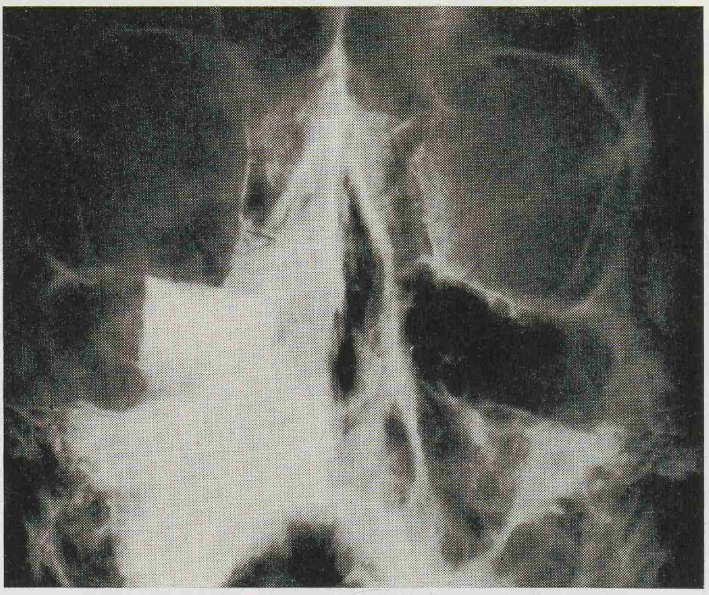

Figure 4. A great stone in the right antrum maxillae.

Comment: After explosions multitrauma patients must be examined carefully when revision of the wounds is made and a sufficient number of radiographs must be taken for various kinds of foreign bodies.

5. The patient was a laborer, with a history of pulmonary tuberculosis of 10 years duration. For about three years there had been occasional bloody secretions in the nasopharynx, unassociated with rhinitis or pain. Radiographs showed a metal foreign body about half a centimeter in diameter situated in the right antrum maxillae. At operation the antrum was found to be filled with thick brownish-black material, in the centre of which there was a piece of rusty steel. Recovery was normal. Pathologist's diagnosis: Mycosis sinus maxillaris, Aspergillosis (Figure 5).

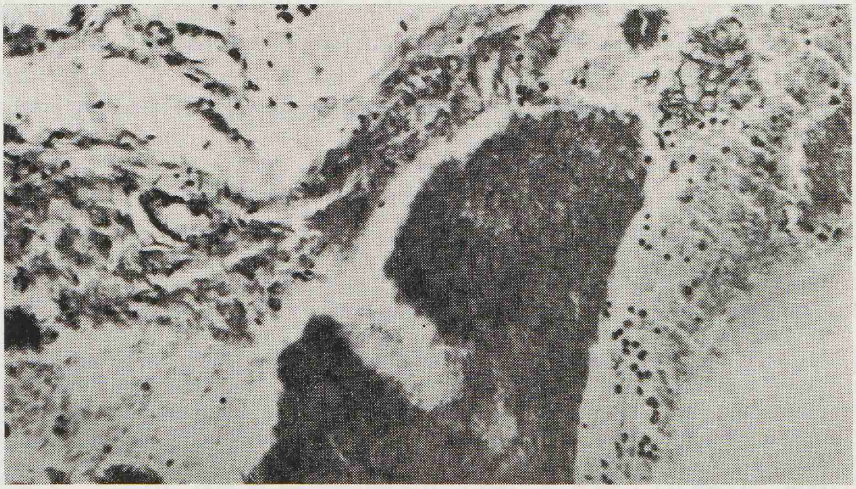

Figure 5. A microscopical view of an aspergilloma found in connection with a piece of steel in the antrum maxillae. 250 x.

Comment: The foreign body had entered the maxillary sinus 12 years before when the cartridge of a hunting rifle had exploded. Tuberculosis is considered to increase the turning of an aspergillusinfection in to a chronic mycosis.

6. The patient had eight months prior to admission to central hospital had an extraction of teeth, among others +6. An immediate denture had been inserted in the upper jaw. The extraction wound of +6 did not heal despite heavy administration of antibiotics. The dentist sutured the fistula three times without succes. The operation findings were polyps of the basic region of antrum maxillae and a smooth surfaced, yellowish foreign body the size of the top of little finger. The mucosa of the antrum was removed and the oroantral fistula closed with a periosteum flap. At follow-up examination one year later there was no abnormal findings.
Comment: When impressions were made for dental prothesis some of the impression material of alginate type had passed through an oroantral fistula into the maxillary sinus, where it maintained a persisting sinusitis. Even at re-examination of the preoperative radiographs the foreign body could not be detected.

ZUSAMMENFASSUNG

Sechs Fällen von Fremdkörper in den Nasennebenhöhlen werden präsentiert. In drei Fällen war der Fremdkörper nach Schiessunglück in die Nasennebenhöhlen gelangt. In zwei Fällen wurden Steine nach Explosionsunglück in den Nebenhöhlen gefunden. Der letzter Fremdkörper war ein kleines Stück aus Zahnprothesepaste, das durch eine oroantrale Fistel in die Kieferhöhle gelangt war.

Es war nicht röntgenologisch nachweissbar. In einem Fall konnte man auch eine Aspergilloma mit einem Stahlstück in der Kieferhöhle nachweisen. Die Fremdkörper in de Nasennebenhöhlen sind so selten, dass sie leicht in der Differenzialdiagnostik vergessen werden und die Entfernung aus diesem Grund versäumt wird.

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