FRONTO-ETHMOIDAL CARCINOMA

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THE following case of malignancy of the sinuses with intracranial extension and lung metastases shows many unusual features. Its site of origin may have been the right frontal or anterior ethmoid but when first seen it was so advanced that it was impossible to be certain of the primary site.

Case Report

The patient, Thomas S., aged 85, was first seen on *28.6.55*. He had a prostatectomy done in *January, 1955*, from which he made an uninterrupted recovery. During convalescence, he noticed some difficulty in breathing through his right nostril. This continued to trouble him for the next two or three months when he also developed some blood stained nasal discharge and pain over his right eye which he described as "gripping". During *May*, his doctor noticed some swelling over the root of his nose and referred him for further investigation.

Examination showed a fit looking old man whose facial appearance was striking. There was marked widening of his glabella due to a swelling which extended from the root of his nose upwards for about 1 in. and outwards into the inner canthi of both eyes. These were displaced laterally. The swelling was almost completely symmetrical though, if anything, more pronounced on the left (Figs. 1 and 2.) While being examined, the patient was constantly sniffing in an attempt to clear his nose. The right nostril was blocked by œdematous mucosa. There was clear mucoid discharge which, when cleaned away, revealed a large fleshy "polyp". There was no clinical involvement of cervical glands.

A diagnosis of carcinoma of the right ethmoid with extension into the frontal sinuses and nose was made. Biopsy was taken and was reported on as follows: "The specimen consists of a piece of necrotic infected material on which it is not possible to give any opinion as to the nature of the swelling." Wassermann and Kahn were negative. X-ray of sinuses showed both antra opaque. His frontal sinuses showed expansion upwards and outwards and extensive erosion of bone in both fronto-ethmoidal areas as well as the roof of the left orbit (Figs. 3 and 4.) Unfortunately his chest was not X-rayed. Further biopsy was taken and reported on *29.6.55* as follows: "The portions of tissue received consist largely of fragments of a highly malignant tumour. This appears as sheets of small, deeply staining round cells with relatively large nuclei, many mitoses and no suggestion of any organization. It is difficult to classify but is probably not an epithelial tumour, and the diagnosis of lymphosarcoma seems most likely."

In view of the patient's age and the obvious extent of the lesion, it was decided not to submit him to surgery or radiotherapy. His general condition deteriorated very rapidly. On *4.7.55* the swelling had considerably increased in size. He had developed intractable hiccough which at first responded to

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small doses of atropine. There was intermittent hæmorrhage from his right nostril. The left nostril never showed anything abnormal. An attempt was made to aspirate the frontal swelling on the assumption that much of this was due to secondary mucocele and/or pus, but no fluid could be obtained. On *11.7.55* the patient developed terminal broncho-pneumonia and rapidly went downhill. He died during the following night. A post mortem was performed on *13.7.55* and reported on as follows:



FIG. 1. FIG. 2.

Showing facial deformity with displacement of eyeballs. (Blood under right nostril, result of biopsy.)

Macroscopic

The paranasal sinuses were occupied by a hæmorrhagic, gelatinous mass, which had excavated and obliterated the ethmoid cells on both sides and involved both frontal sinuses extensively. It extended into the sphenoidal sinuses, the nasal cavity and maxillary antra, especially on the right side. The antra contained a large amount of blood clot. The mass extended upwards into the anterior cranial fossa, invading the meninges, and, at one point, the frontal lobe. There was some subarachnoid hæmorrhage. There was a small ante-mortem thrombus at the anterior end of the superior longitudinal sinus. Numerous miliary, grey nodules were scattered throughout the lungs which were also broncho-pneumonic. No significant abnormalities were seen in other organs, and there was no lymph node enlargement.

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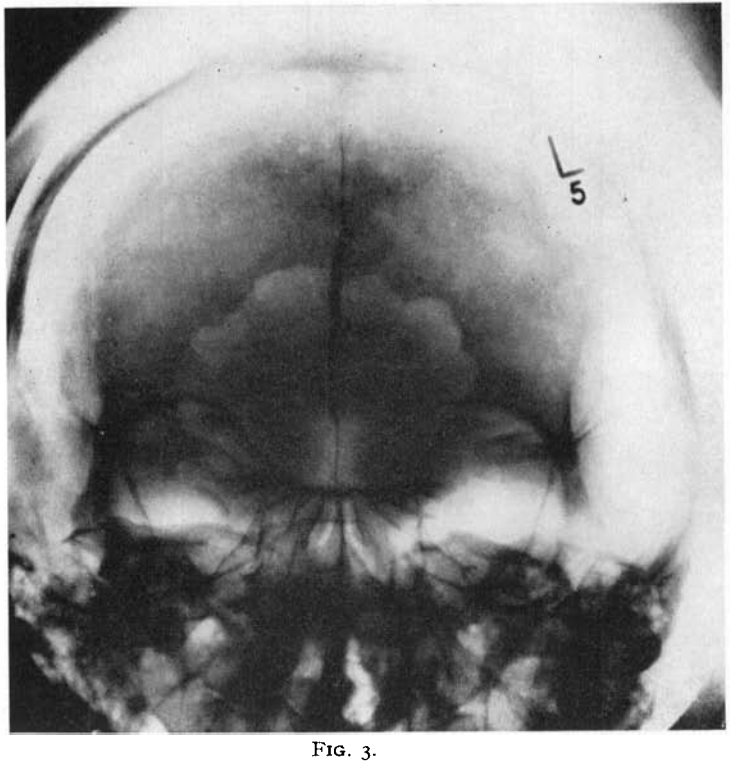


FIG. 3.

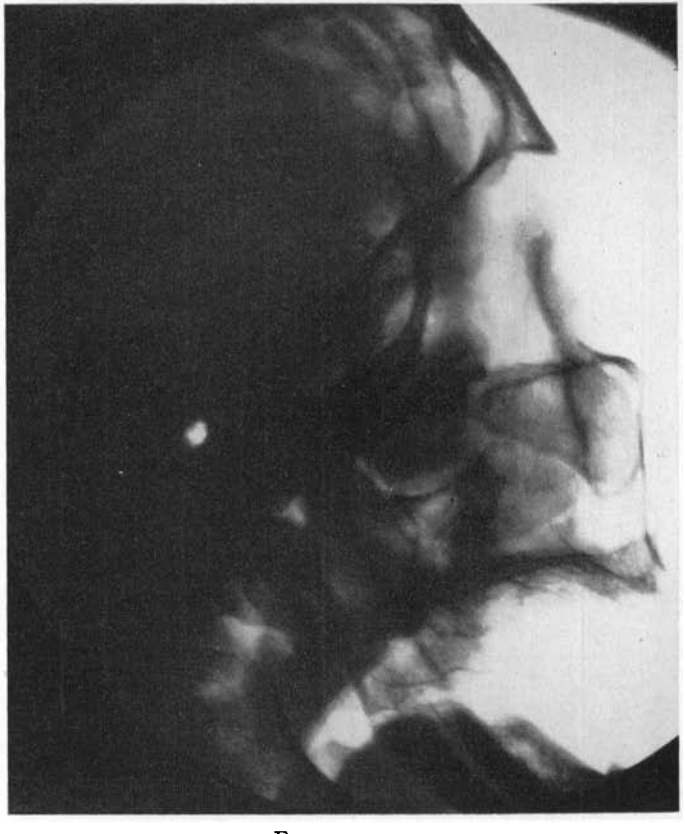


FIG. 4.

FIGS. 3 AND 4.
Expansion and clouding of frontal and ethmoid sinuses, erosion of left orbital roof.

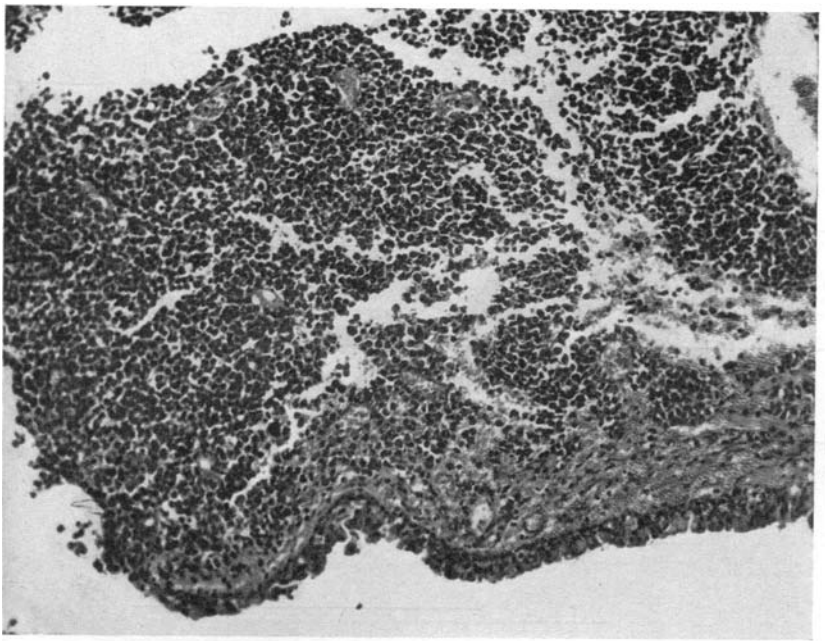


FIG. 5.

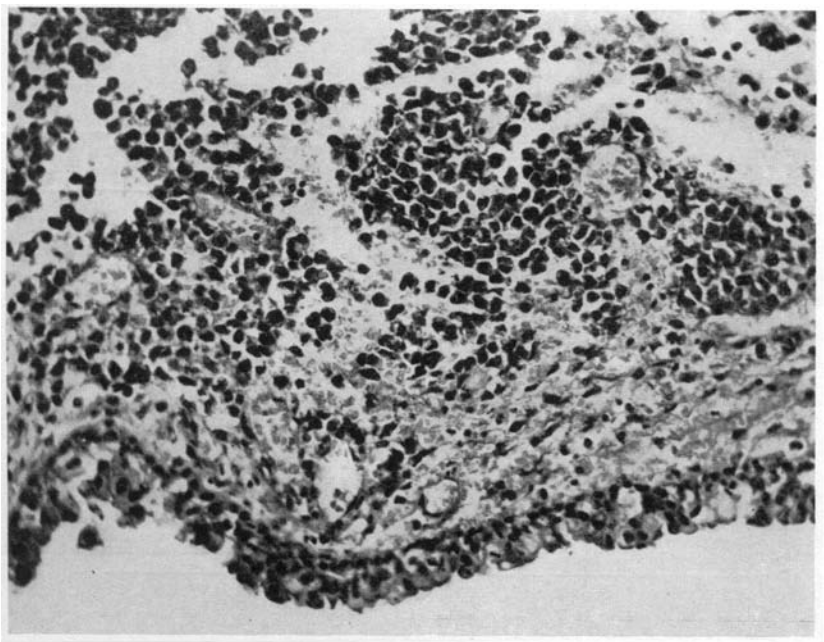


FIG. 6.

Fig. 5 low power and Fig. 6 high power view of tumour. (See text.)

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Microscopic (Figs. 5 and 6.)

The tumour, which is partly necrotic, is composed of masses of rather small round or pleomorphic cells, with dense hyperchromatic nuclei and a thin rim of dark staining cytoplasm. Mitoses are scanty. No adenomatous differentiation is detectable. There are many wide thin-walled vascular channels. The tumour has invaded the meninges on the left, and the right cerebral hemisphere. The nodules in the lung are composed of tumour cells, similar to those in the sinuses. There are patches of broncho-pneumonia. No tumour tissue is seen in the lumen of the sagittal sinus or in the pituitary.

The macroscopic and microscopic findings favour a diagnosis of anaplastic carcinoma of paranasal sinuses rather than lymphosarcoma, as originally suggested.

Discussion

Primary carcinoma of the frontal sinuses is so rare that some authors have, in the past, denied its existence. Extension from the ethmoids occurs more frequently. Undoubted cases of primary frontal sinus disease have been recorded by Breeding (1940), Handousa (1950), Wilmot (1952), Haas (1951), and others.

Haas (1951) describes three types of radiological changes in the frontal sinuses in paranasal cancer: (1) Irregular opacity in cavity from invading tumour (rare), (2) secondary infiltrative destruction of sinus walls (uncommon), (3) bony changes restricted to margins of sinus and its immediate surroundings (35 per cent. of his cases of paranasal cancer). The present case shows features of all three. In Haas' series of 65 cases, only one arose in the frontal. It invaded the orbit, anterior cranial fossa and bones of forehead, but left other sinuses uninvolved.

Our case presented in the nostril. But for this a diagnosis of mucocele might have been possible. That this may closely resemble carcinoma both clinically and radiologically was shown by Anthony and Williams (1951). They describe a patient who had a secondary mucocele following long standing polyposis. This produced wide dilatation of the ethmoids, destruction of medial orbital walls, dorsum sellae, body of sphenoid and both petrous tips. Partial reossification occurred following radiotherapy. The subsequent course led to correct diagnosis, and the patient was eventually relieved by surgery. Again, Tamari and O'Neil (1950), in recording four cases of mucocele, found when operating on one of them, a carcinoma which had begun to invade the orbit.

Remote metastases to the lungs are not commonly recorded. Öhngren and Ringertz (quoted by McMahon) had a patient of 25 who died of lung metastasis one year and four months after surgery, radium and X-ray treatment to a carcinoma of the antrum. Gordon (1955) found no case of lung metastasis among 55 nasal and paranasal tumours.

The histological diagnosis in our case presented difficulties, as undifferentiated tumours often do. Earlier generations of pathologists would have had no doubt in classifying this as lymphosarcoma. Sections from many parts of the tumour all show the same anaplastic structure and no epidermoid areas can be found. Harrison (1953), in recording two cases of lymphosarcoma of sinus origin, also stresses the difficulties in deciding the exact pathology of

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these tumours. Parts of epidermoid nasal carcinoma may be so cellular and diffuse in structure that they may be microscopically indistinguishable from sarcoma. The least differentiated growths merge insensibly with syncytial reticulosarcomas (Willis, 1948). Absence of gland metastases and presence of lung secondaries also favour a diagnosis of carcinoma in this case. The clinical findings furthermore left little doubt that the growth originated in the respiratory epithelium. Dr. Bailey of the Southern Group laboratories, who kindly looked at the section, agrees with our views.

Summary

(1) A case of primary carcinoma of the paranasal sinuses originating from either frontal or ethmoid sinuses is reported.

(2) The clinical features, X-ray appearances and pathological features are discussed.

(3) The difficulties of histological classification are underlined.

(4) Some of the literature is briefly reviewed.

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