FIG. 5.—Photograph of the tumour after removal. Weight 7.5 oz.

end. On section the nodules had a colloid appearance with extensive calcification.

Postoperative Course

Following operation the patient developed a partial collapse of the right lower lobe and, in spite of the intercostal drain, fluid collected in the chest.

With aspiration of the fluid and breathing exercises the lung gradually expanded, the patient being able to leave hospital on the 48th post-operative day, free from symptoms other than the rheumatic pains in the shoulder.

Histology of the Specimen

The section showed a nodular colloid goitre with no evidence of thyrotoxic activity.

Summary

A case is presented of an aberrant colloid goitre present in the superior mediastinum. The tumour was giving rise to dysphagia serious enough to cause loss of weight.

The thyroid tumour was removed transthoracically via the bed of the fourth rib without difficulty.

Postoperatively the patient had a collapse of the right lower lobe which responded to breathing exercises, the patient leaving hospital in good health having put on weight.

The writer wishes to thank Mr. D. H. Patey for permission to publish this case, and the Pathological, Radiological and Photographic Departments of the Middlesex Hospital for their work.

2. A Case of Fibrosarcoma of the Hand

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The following case is presented as an uncommon condition which poses several pathological, prognostic, therapeutic and medicolegal problems of interest.

Briefly told, the patient's story is as follows:—

In early 1940 the patient, a weaver of 44, received a blow on the palm of her right hand while at work, causing some pain for two to three days, slight bruising but no marked swelling. The condition rapidly subsided.

In May 1943 she developed weakness of the right fingers with 'loss of control,' and noticed a wasting of the muscles of her right hand. This was followed in June 1943 by the development of an aching pain extending up the outer side of the right arm from the thumb to the shoulder, almost constant in character, night and day, and severe enough to cause persistent sleeplessness.

In October 1943 she attended the Manchester Royal Infirmary as an out-patient and was found to have wasting and loss of power of all the small muscles of the right hand, loss of pin-prick sensation over an ulnar distribution and a typical

flexion deformity of the fifth finger, with hyperextension of the metacarpophalangeal joint.

In November 1943, after further investigation as an in-patient (during which no other abnormal physical signs were discovered, the C.S.F. was normal and the Wassermann reaction negative) her symptoms were considered probably to be part of a thoracic outlet syndrome, possibly due to a cervical rib or band. X-rays showed an enlarged right transverse process of the seventh cervical vertebra but no definite cervical rib. She was therefore referred to her nearest hospital for a course of physiotherapy. This treatment she had in intermittent courses over a year, without improvement.

From November 1944 to April 1949 she resigned herself to the almost constant pain and went back to work 'to keep my mind off the pain,' but in April 1949 she developed a swelling of her right palm which slowly increased in size, causing such pain that in November 1949 she again attended hospital.

On examination. As shown in Fig. 1 there was

FIG. 2.—Appearance at operation.

FIG. 1.—Photograph of the hand before operation.

FIG. 3.—Microphotograph of a section of the tumour.

a large swelling in the right palm, swollen fingers with shiny atrophic skin and wasting of the thenar and hypothenar eminences. The swelling was non-fluctuant, associated with much pain in the palm and an intense burning sensation over the inner three digits. Markedly tender, she dared not use the hand for any movement whatsoever, and showed a marked hypersensitivity to even minor rises of environmental temperature. The wrist was normal but the forearm showed wasting of the flexor muscles. An X-ray of the hand showed no bony abnormality. Operation by Mr. R. P. Jepson revealed (after reflecting a triangular palmar flap) a large, pale, fleshy mass deep to both flexor tendons, obliterating the palmar space and extending widely into the surrounding tissues (Fig. 2). The limits of this mass could not be defined. Excision was carried out as widely as possible and subsequent histology showed a cellular fibrosarcoma (Fig. 3) which the Holt Radium Institute considered would be quite unresponsive to irradiation.

The patient was duly discharged with good function in the hand, but only one month later the pain returned and the swelling reappeared. This she endured for four further months, but eventually returned to the Royal Infirmary and submitted to a forearm amputation.

Comment

Incidence of Fibrosarcoma of the Hand. Large series of tumours of the hand have been reported in the literature (369 cases, Park, 1939), but the majority of such cases are superficial, epitheliomata and melanomata accounting for roughly 85 per cent. in his series. Tumours of the deep tissues accounted for only 24 of the 369 cases. In a more recent series of 60 fibrosarcomata (Hellar, 1950) only one occurred in the hand.

Pathology. The site of origin, as in this case, can often only be inferred. Any mesenchymal tumour the cells of which are recognizable as collagen-forming fibroblasts are, by definition, either fibromata or fibrosarcomata, according to their behaviour. Their origin is from any mesenchymal tissue, and plainly therefore they are as ubiquitous as the macrophage itself. The relative frequency of their origin from nerve, muscle or tendon sheaths, or fascial, synovial, periosteal or endosteal tissue is an academic point. All such tumours, as mesenchymal tissue, furthermore have the capacity to develop varying proportions of cartilaginous, bony, mucoid or hyaline elements.

Histology cannot, however, be relied on as a prognostic guide, for seemingly benign fibromatous formations are compatible with malignant clinical properties, whilst conversely the mere presence of mucoid tissue does not, *per se*, be-

speak a heightened malignancy. It is suggested by some that the presence of myxomatous tissue is an index of the proteolytic activity of the tumour cells, and so of their malignancy (Sylvén, 1949) but myxomatous tissue has no such individuality. It merely represents degeneration which may occur with equal frequency either in fibromatous or fibrosarcomatous tissue.

Grading of Malignancy. There is thus wide divergence of opinion as to how far histological grading can be used as an index to prognosis, and even divergence as to the relative significance of the various individual features within the histological picture. At best, one can make only a general assessment based not on any one single feature, such as the number of mitotic figures or the presence or absence of giant cells, but, in addition, weighing the degree of anaplasia, the absence of intercellular substance, the absence of macroscopic definition, the infiltration of surrounding tissues, the rate of growth and the presence or absence of metastasis.

Natural History. The case presented many features characteristic of a fibrosarcoma. The steady progression in size, the association of pain (in this case a burning pain associated with marked hyperalgesia over the ulnar distribution, apparently here due to irritation of the ulnar nerve), the early recurrence after local removal, all are typical. But the severity of pain was striking, was this, reducing her to a state in which she dared not stir the hand from absolute immobility, which obliged this phlegmatic patient to submit to treatment.

The relationship of the tumour to the previous longstanding paresis and wasting cannot be assumed to be more than coincidental. Though never proven by exploration, and with some atypical features, the latter had all the appearance of being primarily a 'thoracic outlet syndrome' involving fibres of the first thoracic nerve and unrelated to the subsequent malignancy.

Treatment and Prognosis. Such tumours are radio-resistant and, in general, radiotherapy will not effect a cure. The only indication for attempting radiotherapy is refusal of operation or intercurrent disease. The treatment of choice is wide local resection, with histological examination to give an approximate guide to the likely future. In the hand, however, it is obvious that radical local removal, as in this case, is rarely possible, and it is then difficult to assess the relative merits and dangers of a local palliative resection. Recurrence does not appear to carry with it a heightened local malignancy (Hellar, 1950), and it is hard to insist on early amputation (and so to forgo the possibility of successful eradication, or at least of useful palliation by local excision) except over-

the strength of the most malignant histological report.

Repeated local excisions of recurrence do, however, appear to be frequently followed by pulmonary metastasis and are therefore better avoided. Amputation should be carried out in those cases where recurrence has occurred.

In general, the prognosis is bad. In the recent series already quoted (Hellar, 1950), the average duration of life, untreated, varied from 6 months to 2 years; the average duration of life in all cases was $2\frac{1}{2}$ years. More than half developed recurrences after surgical excision; these usually occurred within one year of operation, and death from pulmonary metastases was the common end. Wide variations occur in the clinical course, however, and the difficulties of assessing that course from the histological picture has already been discussed.

Medicolegal Aspects. The relationship of this tumour to occupational trauma is of some interest. The patient was a loom worker liable, as she subsequently admitted, to recurrent minor trauma, especially to the right hand, though she could only recall one major incident (that recorded in 1942). Ewing (1926) suggests that to establish trauma as a casual relationship there must be at least:—

- (1) Previous absence of any tumour.
- (2) An authentic history of trauma.
- (3) Correspondence of site of trauma and tumour.

(4) Reasonable time limit between trauma and development of the malignancy.

(5) Proven malignancy.

In this case four out of the five conditions were fulfilled, but the difficulty of the time relationship remains. The only definite trauma the patient recalls was some seven years before the onset of malignancy, and it appears almost certain that the original trauma was not followed by any persistent swelling (such as might signify a fibroma of traumatic origin which later underwent malignant change). Nor was the onset of malignancy preceded by any definite incident she could remember. Undoubtedly multiple minor traumata occurred to her right hand while at work on the loom, but it is impossible to assess how severe or frequent these were, or what part they played in the origin of the tumour.

It appears improbable that occupation had much to do with the development of the earlier condition of wasting, and unlikely that the latter had anything to do with the development of malignancy. Either directly or indirectly therefore it would be difficult to maintain occupational trauma as playing a part in the genesis of this tumour.

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