TWO CASES OF SECONDARY CARCINOMA OF BONE WITH PERIOSTEAL REACTION

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Brailsford[1] divides the radiological appearances of secondary carcinoma of bone into 4 types, characterized by (1) erosion of the surface of the bone, (2) multiple islands of cancellous destruction (3) localized areas of denser bone formation, and (4) generalized increase in density of a bone. He associates the last with periosteal reaction, especially in the form of fine radiating spicules. This appearance is well known as a manifestation of secondary carcinoma of bone, although amongst the most unusual. It is sometimes seen as a sign of a secondary bony lesion from neuroblastoma in children[2].

The following two cases are of interest because they represent examples of partially osteoplastic secondary growths from gastric primaries—a well-known but sometimes

forgotten source of such lesions[3]. Both had a resemblance to osteogenic sarcoma in that there was considerable overlying soft-tissue swelling and because they were situated in the humerus. The X-ray appearances were also suggestive of primary bone tumours and, although the age of the patients and the situation in the humerus in case 2 were against this diagnosis, considerable difficulty might have arisen if an indefinite histological report had been returned or had the previous histories not been known.

CASE REPORTS

Case 1

A European male, aged 55, was admitted in May 1955 with a diagnosis of perforated peptic ulcer. Laparotomy showed a perforated gastric carcinoma, which was successfully closed by suture. Seven weeks later the primary was removed at gastrectomy. Histological examination of the primary tumour showed an anaplastic carcinoma (Dr. T. Sacks). The patient presented again in June 1956 complaining of severe pain in the right shoulder for 3 months. There was marked swelling of the whole upper arm, which was tense and tender. A hard fixed epigastric mass and hard mobile right axillary glands were present. The X-ray appearances (Fig. 1) showed irregular cancellous destruction with a few areas of increased density and a fine hair-like periosteal reaction. Biopsy of the node showed (Dr. M. Sacks) the same histological picture as that of the gastric primary, and so did that of the humerus (Fig. 3, Dr. N. Woolf). The growth in the last specimen was somewhat more anaplastic than those in the other two areas examined but clearly of the same origin. Fractionated doses of deep X-ray therapy were followed by complete relief of pain, great reduction in swelling, and restoration of function of the arm. Mid-line dose was 3456 r. (200 kV constant potential; added filter 2 mm. Cu H.V.L. 2·25 mm. Cu F.S.D. 50 cm.). Later an osteolytic area in the dorsal spine developed, and the patient became symptom-free for a while on similar treatment.

Case 2

A Coloured male, aged 53, underwent gastrectomy in February 1956 for carcinoma of the pylorus. Many secondary glands were found at laparotomy and the histology was that of an anaplastic carcinoma (Dr. T. Sacks). He presented again in October 1956, with swelling and pain and a feeling of lameness in the left upper arm. Clinically there was localized thickening in the centre of the lateral aspect of the humerus. There was no evidence of local recurrence of the gastric lesion. X-ray (Fig. 2) showed some sclerosis of the centre of the shaft of the humerus, with overlying spicular formation and partial destruction of the cortex. Biopsy showed the same histology as the gastric primary (Fig. 4, Dr. N. Woolf). The patient discharged himself from hospital before treatment could be given.

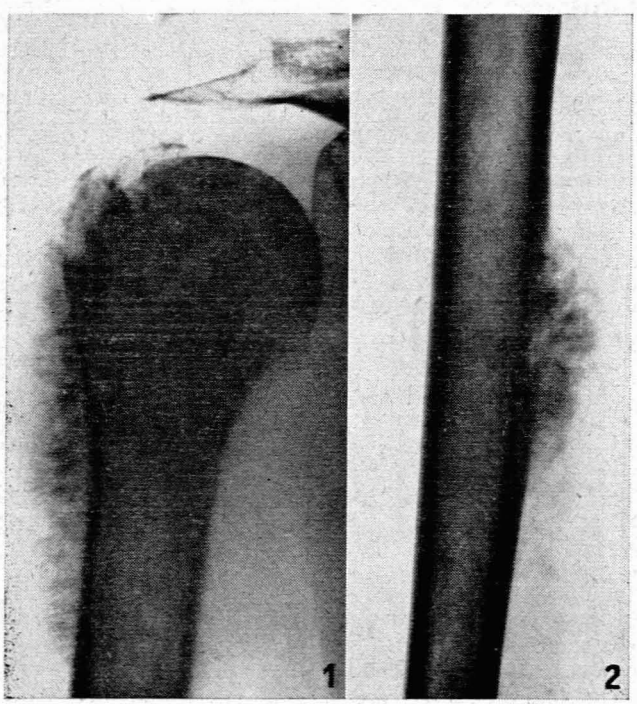

Fig. 1. Case 1. X-ray of humerus.
Fig. 2. Case 2. X-ray of humerus.

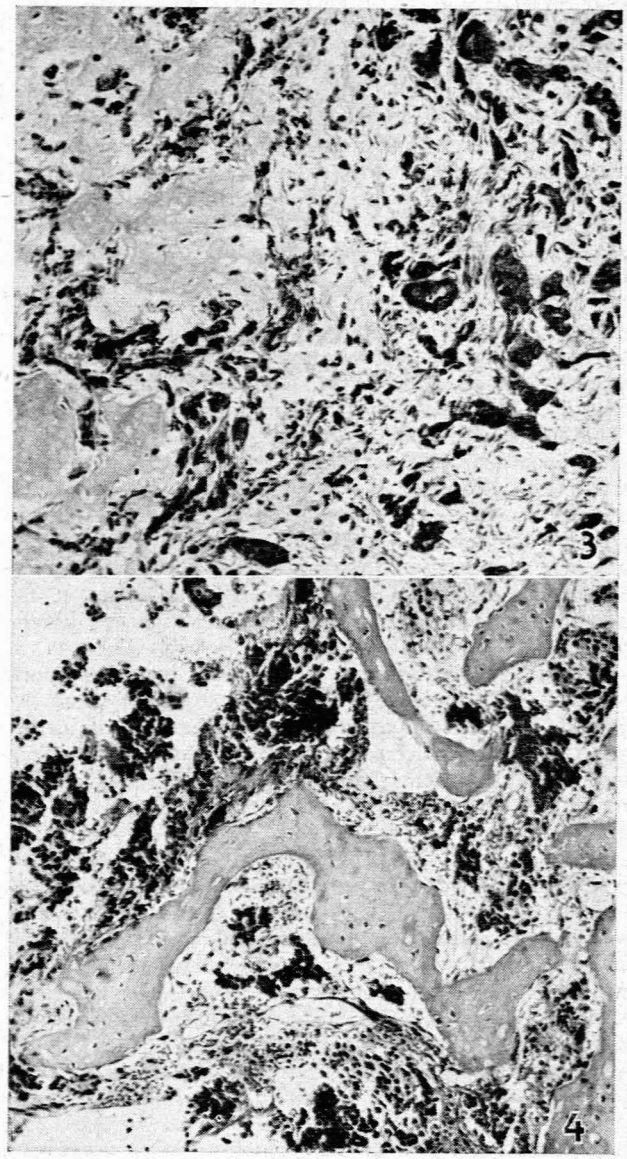

Fig. 3. Case 1. Biopsy of bone lesion.
Fig. 4. Case 2. Biopsy of bone lesion.

The response of the first case to X-ray treatment at once suggested a means of treating the second, although the response of gastric carcinoma to irradiation is very variable. Fairchild and Shorter[4] have treated some primary growths with 250 kV X-rays directly at operation and with supplementary fields later, with some good results, and

radon seeds have also been used for treating primary growths in a few cases with some good effect.[5] It would seem to us that the type of lesions described are at any rate worth a trial of palliative therapy.

SUMMARY

Two cases of metastatic gastric carcinoma are described, both resembling osteogenic sarcoma. The response of one to X-ray therapy is noted and it is pointed out that this may sometimes be a useful palliative agent for gastric carcinoma.

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REFERENCES

1. Brailsford, J. F. (1953): *Radiology of Bones and Joints*, 5th ed., p. 373. London: Churchill.
2. Caffey, J. (1956): *Pediatric X-ray Diagnosis*, 3rd ed., p. 641. Chicago: Year Book Publishers.
3. Willis, R. A. (1952): *Spread of Tumours in the Human Body*, 2nd ed. London: Butterworth.
4. Fairchild, G. C. and Shorter, A. (1947): Brit. J. Radiol., **20**, 511.
5. Joll, C., Ledlie, R. C. B. *et al.* in Carling, E. R., Windeyer, B. W. and Smithers, D. W., ed. (1955): *British Practice of Radiotherapy*, p. 303. London: Butterworth.