Metastatic renal carcinoma presenting with profuse haemorrhage at cardiac surgery

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Summary

A 62-year-old man undergoing coronary artery bypass grafting sustained profuse unexplained haemorrhage during sternal diathermy before sternotomy. Histology of tissue from the sternum suggested metastatic renal carcinoma. A primary renal tumour was subsequently identified. Sternal metastases are rare, often highly vascular, and arise particularly from thyroid or renal tumours. In the absence of angiographic evidence of an eroding aortic aneurysm, sternal metastases represent the most likely cause of unexplained haemorrhage during sternotomy.

KEY WORDS: hypernephroma, metastasis, sternotomy.

Introduction

Primary renal tumours are often silent and only diagnosed when distal metastases cause symptoms. These metastases often mimic other diseases (Cronin *et al.*, 1976) or remain silent and are discovered incidentally at surgery or autopsy (Skelton, 1959). Osseous metastases are common and have been reported in most skeletal sites including the sternum. They are often highly vascular and may be pulsatile (Nalle, 1947). Such deposits in the sternum have been mistaken for aortic aneurysms eroding the thoracic wall (Crile, 1936). This report describes a renal carcinoma presenting at cardiac surgery with profuse haemorrhage from an unsuspected sternal metastasis.

Case report

A 62-year-old Caucasian man presented with a 2-year history of chest pain precipitated by exercise and eating, and relieved by rest and glyceryl trinitrate, but not antacids. The pain was retrosternal and did not radiate. Barium studies showed a hiatus hernia with oesophageal reflux. Nocturnal and rest pain developed in the 2 months before admission. The

patient had no other cardiac, respiratory or genitourinary symptoms. The past medical history was non-contributory; he had never smoked, was normotensive and had no abnormal findings. Postero-anterior and lateral chest radiographs were normal while resting electrocardiograms showed a normal axis with minimal ST segment depression in leads V₁ to V₆. Cardiac catheterisation showed severe impairment of left ventricular function with a high diastolic pressure (40 mmHg). Coronary arteriography revealed extensive disease with a tight left main stem stenosis and severe stenosis of a dominant right coronary artery.

At operation, the sternum was exposed and its periosteum incised in the midline using cutting diathermy. Two centimetres below the manubriosternal junction, the periosteum gave way resulting in profuse haemorrhage with loss of 2 litres of blood. Frozen sections prepared from tissue removed from the site of haemorrhage showed vascular connective tissue alone. As there was no evidence of malignancy the patient was heparinized and approximately 4 litres of blood were autotransfused, while haemostasis was secured with diathermy. Sternotomy exposed a cyst-like cavity in the right hemi-sternum enclosed by periosteum and the third rib cartilage. Cardiac bypass was established and 5 aorto-coronary saphenous grafts were inserted. The sternal fragments were splinted to the left hemi-sternum to achieve sternal stability. Postoperative progress was satisfactory with relief from pre-operative chest pain. Histological examination of paraffin sections of the biopsy material now showed not only abundant granulation tissue but also a few small collections of polygonal cells with plentiful clear cytoplasm suggestive of metastatic renal carcinoma. The primary tumour was identified in the upper pole of the left kidney by intravenous pyelography. A bone scan showed in-

creased uptake in the head of the right first rib compatible with a further metastasis. The patient was referred for chemotherapy.

Discussion

Tumours in the sternum are rare and are more likely to be metastatic than primary (Macey and Phalen, 1943; Vieta and Maier, 1962). Kinsella, White and Koucky (1947) found the kidney to be the second commonest site of origin of sternal metastases after the thyroid. Secondary sternal deposits may pulsate (Crile, 1936; Kinsella *et al.*, 1947), but usually present with either a localized palpable mass or pain, or both. Our patient had neither a localized swelling nor pulsation, but presented with chest pain presumed to be of cardiac origin. It is of interest, however, that chest pain from sternal tumours may be referred to the shoulder and arm and simulate cardiac pain (Burnard, Martini and Beattie, 1974). In our patient, simultaneous coronary artery surgery and tumour decompression prevents us from identifying the cause of pain.

The management of choice of patients with a solitary secondary deposit of renal carcinoma is nephrectomy and resection of the secondary lesion (Middleton, 1967). Metastases in the sternum have been resected with some success and a suitable sternal prosthesis has been described (Eschapasse *et al.*, 1981). In our patient, radical surgery was not undertaken because of evidence of an additional

metastasis and the possible dissemination of tumour by autotransfusion.

Acknowledgment

We are grateful to Dr M. Honey for referring this patient.

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(Accepted 30 September 1982)