Postgraduate Medical Journal (1988) **64**, 475–476

Letters to the Editor

Unusual presentation of cancer-induced lactic acidosis

Sir,

Lactic acidosis is a common cause of metabolic acidosis with high anion gap and is a potentially lethal complication of a number of diseases. It develops as a result of an imbalance between lactate production and utilization. Malignancies are a relatively uncommon cause between lactate production and utilization. Malignancies are a relatively uncommon cause.[1-8]

An 84 year old woman was admitted because of dizziness. She appeared cachetic and her blood pressure was 100/50 mm Hg without orthosis.

A chest X-ray showed a left hilar mass with bilateral mass lesions in the lower lung fields bilaterally shown on needle biopsy to be poorly differentiated squamous cell carcinoma. Liver function tests were normal. Serum sodium was 132 mmol/l, chloride 91 mmol/l, potassium 4.8 mmol/l and the total bicarbonate, 16 mmol/l and serum creatinine, 1.1 mg/dl. Arterial P_{CO_2} was 24.5 mm Hg and the pH was 7.39. A technetium liver scan was normal.

On the fifth day, the patient was afebrile and in mild respiratory distress. The results of blood urea nitrogen and serum creatinine were unchanged, toxicology screen was negative, there was no ketonuria and the arterial pH was 7.13. The blood lactic acid level was 14 mmol/l. The patient was treated with parenteral sodium bicarbonate. Two days later, the arterial pH was 7.34 and total bicarbonate 10.2 mmol/l. The blood lactic acid level was 13.5 mmol/l. Lactic acidosis persisted and she died on the fifteenth hospital day.

None of the usual causes of lactic acidosis such as septicaemia, shock, hypoxaemia or advanced liver failure was noted in our patient. It appears that the squamous cell carcinoma of the lung may have been responsible for the lactic acidosis. Lactic acidosis is a well recognized problem in patients with hyperleucocytic leukaemias[1,5] and in lymphomas[4] and reflects the high metabolic rate of the tumour cells and the associated tissue hypoxia due to hyperleucocytosis. In solid tumours, however, simultaneous liver involvement appears to be an important determinant causing impairment of lactic metabolism.[2,3,6,7] The mechanism of lactic acidosis in solid tumours, however, is far from clear, particularly in those without massive liver involvement although speculation concerning the effects of tumour-related products exists.[2,8] Furthermore, we did not observe any elevation of blood lactate levels after bicarbonate infusion as was previously reported.[3]

Editor's note

Two patients with small cell carcinoma of the bronchus associated with lactic acidosis were reported in this *Journal*, volume **62**, pp 297–298.

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Removal of a knotted Swan–Ganz balloon catheter using a Dotter basket

Sir,

Pulmonary artery balloon catheters are frequently used to monitor responses to therapy in cardiac failure. Bedside manipulation of these catheters without radiographic image intensification can result in knot formation. We describe a technique for removal of a knotted Swan–Ganz catheter from the heart using the Dotter retrieval basket inserted via the femoral vein.

A 63 year old man was admitted to the coronary care unit for treatment of intractable cardiac failure post myocardial infarction. A 7 Fr Swan–Ganz thermodilution catheter was inserted via the left subclavian vein and manipulated over subsequent days without radiographic monitoring resulting in the formation of a double knot (Figure 1a). It proved impossible to remove the catheter via the subclavian vein because of the large knot.

A Dotter basket, normally used for the retrieval of calculi from the renal tract, was inserted into the right femoral vein via its 8 Fr sheath and directed into the right

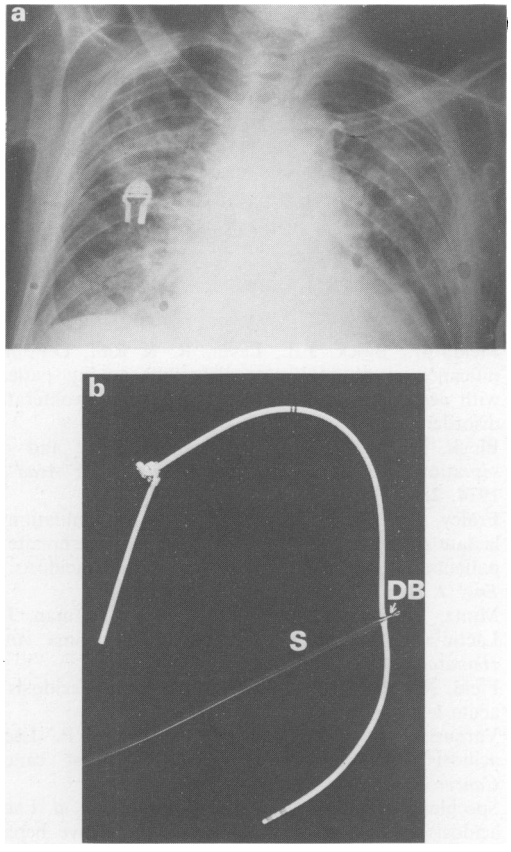

Figure 1 (a) Chest radiograph showing doubly knotted Swan–Ganz catheter; (↑) (b) knotted catheter ensnared in Dotter basket (DB) partially withdrawn into sheath (S) (as removed from femoral vein).

atrium under radiographic screening. The free end of the catheter was withdrawn into the right atrium and snared with the helical basket. Tension was applied to the end of the catheter in order to tighten the knot and the catheter then cut at the subclavian puncture site. The basket, sheath and ensnared knotted catheter were removed via the femoral vein (Figure 1b), by gently dilating the femoral puncture site. Bleeding was prevented by localizing pressure. The patient made a slow but uncomplicated recovery to be discharged home.

Knotting of a Swan–Ganz catheter is a rare complication of this intracardiac pressure monitoring technique. Sometimes a knot can be undone by manipulation using radiographic image intensification. When this proves impossible a major problem arises when the knot is too large to be withdrawn safely through the subclavian puncture site. Both subclavian 'cut-down' techniques and thoracotomy must be considered, but are not without complications especially in patients with severe cardiac failure.

Various devices have been used to remove unwanted, embolized, intravascular objects,[1-3] and we have previously described the removal of fractured pacemaker electrode fragments using the Dotter retrieval kit.[4] Our case illustrates the value of this device in aiding the relatively atraumatic removal of a knotted intravascular catheter avoiding haemorrhagic complications and the need for thoracotomy. Unlike endoscopy forceps this snaring device provides a firm grip on intravascular objects and this was particularly valuable in this unusual case.

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