carcinoma."¹ Older pathologists may remember a report by Dukes and Masina entitled, "Classification of Epithelial Tumours of the Bladder" in which they not only had a category of transitional cell carcinoma with metaplasia, separate from transitional cell carcinoma and pure squamous cell carcinoma, but they drew attention to its common association with rapidly growing tumours of a relatively high grade of malignancy.² Nevertheless, I do think that periodic reiteration is worthwhile, and it has been 40 years.

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Hodgkin's disease presenting with hypercalcaemia

Mayne and Bunch reported a case of Hodgkin's disease presenting with hypercalcaemia.¹ We also report a patient in this relatively rare category of hypercalcaemia in lymphoma.

A 67 year old retired miner presented as an emergency admission with shortness of breath and chest pain radiating to the shoulders. He also complained of backache, difficulty in walking, and weight loss. He had chronic faecal fistulae following diverticulitis and peritonitis five months earlier.

Haemoglobin concentration was 11.2 g/dl and erythrocyte sedimentation rate 102 mm in the first hour. Chest x-ray picture and lung scan showed no focal abnormality. Cardiac enzymes, plasma amylase, and electrolytes were all normal. The chest pain, thought to be of musculoskeletal origin, quickly resolved and he was discharged after a few days on codeine phosphate.

Three weeks later he was readmitted with similar symptoms. Examination showed bronchopneumonia and dehydration. The plasma electrolyte concentrations were as follows: sodium 138 mmol/l, potassium 2.3 mmol/l, chloride 92 mmol/l, and bicarbonate 34 mmol/l. Creatinine concentration was 142

μmol/l and urea 13.1 mmol/l. Haemoglobin concentration was now 10.9 g/dl, red blood cell count $4.1 \times 10^{12}/l$, alkaline phosphatase activity 409 IU/l and gamma glutamyl transferase (GGT) 183 IU/l. He was treated with rehydration and calcitonin (320 U/12 hours). Two days later he became very breathless and his general condition continued to deteriorate. The following day he died.

Necropsy showed that he had an enlarged spleen (200 g) and liver (1700 g), both with numerous small deposits of tumour (about 0.5 and 1.0 cm, respectively). Sections of these organs showed nodules of large cell non-Hodgkin's malignant lymphoma. The cause of death was recorded as bronchopneumonia secondary to non-Hodgkin's malignant lymphoma in addition to chronic diverticular disease with fistulae.

Like the case of Mayne and Bunch¹ our patient with Hodgkin's disease presented with hypercalcaemia but without clinically apparent bone disease. Skeletal metastases were not apparent and none was found at necropsy. Raised plasma alkaline phosphatase activity probably reflected hepatic disease rather than bone disease as GGT activity was also increased.

The hypercalcaemia in our patient did not respond quickly to treatment. Little could be done as his general condition rapidly deteriorated in association with the bronchopneumonia and diverticular disease.

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Immunohistochemical identification of bacteria in tissue sections

In their paper on the immunohistological demonstration of *Salmonella virchow* Bignardi and Khong state that they are not aware of any reports describing the identification of bacteria in routinely processed human tissue sections using the immunoperoxidase method.¹ We reported the identification of group B streptococci in necropsy material in *The Journal of Clinical Pathology* using the immunoperoxidase technique with both monoclonal and poly-

clonal antibodies.² The latter was serum used for routine serology in microbiology laboratories. The technique has also been used for the identification of *Leptospira*, *Mycobacterium leprae*,⁴ and *Chlamydia trachomatis*.⁵

We have also used rabbit antiserum raised against *Listeria monocytogenes* types 1 and 4 to stain this organism in human formalin fixed tissue. A section of meninges from a woman who died with an *L. monocytogenes* type 1 meningitis was stained with immunoperoxidase. The paraffin wax embedded section was stained using the peroxidase-antiperoxidase technique; the serum was diluted 1 in 100 and incubated for 30 minutes. The serum was specific for species but did not distinguish between types.

We are concerned that Bignardi and Khong did not test their serum against other organisms as it is quite possible that the antiserum used would also react with other species of *Salmonella* and maybe other Gram negative organisms such as *Escherichia coli* as well. We feel that it is important to show the specificity of sera used for microbial identification by testing it against other organisms as we have reported.² Because of the potential cross reactions between bacteria it is desirable to use monoclonal antibodies when possible.

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