encountered similar cases to those described by Dr D Thompson and others (7 May, p 1309) in which initial radiographs showed only degenerative changes, and only incessant pain and a raised erythrocyte sedimentation rate gave the clue that this was more serious than osteoarthritis.

Two patients who were subsequently found to have staphylococcal septicaemia and vertebral osteomyelitis gave a clear history of recent trauma—in one a fall down stairs and in the other a fall in her garden. Similar pitfalls exist when elderly patients presenting with back pain are found later to have spinal metastases or myeloma (this is more common than vertebral osteomyelitis).

The authors do not mention isotope bone scanning. This can often determine the site of the lesion when radiographs are not helpful and may show involvement of other parts of the skeleton that is not obvious clinically.

ANTHONY J RICHARDS

Department of Rheumatology,
Worthing Hospital,
Worthing,
West Sussex BN11 2DH

SIR,—The lesson in the article by Dr D Thompson and others (7 May, p 1309) is timely as osteomyelitis is often diagnosed late, especially in infants and the elderly.

Vertebral osteomyelitis produces narrowing of the intervertebral disc space, often with irregularity of the vertebral borders, and no other disease of the spine produces the same appearance in a lateral spinal radiograph. One of the cases described was misdiagnosed as secondary carcinoma, but this condition causes vertebral body destruction and rarely causes intervertebral disc damage. Thus vertebral osteomyelitis can almost always be diagnosed by correct interpretation of radiographs.

GEORGE BENTLEY

University Department of Orthopaedic Surgery,
Royal National Orthopaedic Hospital,
Stanmore,
Middlesex HA7 4LP

SIR,—Dr D Thompson and colleagues (7 May, p 1309) state that Gram negative organisms are a rare cause of spinal infection and that most cases in young patients are due to staphylococcal infections. This may be true for a British population, although they do not quote any study to support this statement, but it is not necessarily true in other populations, particularly when there may be a large population of drug abusers (which does occur in this country). Joshi and Prinka reported that vertebral osteomyelitis disc infection in a series of 15 patients was in 14 patients due to pseudomonas infection, with 14 of the 15 patients also being abusers of intravenous drugs.¹ Clearly pseudomonas infection would require a different choice of antibiotics from staphylococcal infection, and therefore this alternative organism should be considered in patients who abuse intravenous drugs.

The results of needle biopsy of vertebral bodies and intervertebral discs depends to some extent on the technique of biopsy used. Biopsy would be a particularly unhelpful technique if up to 80% of needle biopsy specimens did not provide sufficient tissue for microbiological analysis. In Joshi and Prinka's study 15 out of 16 aspirates were positive on culture.¹ It should be remembered that needle biopsy specimens may be sterile on culture not because the specimen is inadequate but because the patient has had previous treatment with antibiotics, which have partially controlled the infection before the time of biopsy. That 80% of biopsy specimens were insufficient for microbiological

analysis does not accord with other reported series,^{1,2} and I wonder where this figure comes from. The fact that a specimen is sterile on culture does not necessarily indicate that it is an inadequate specimen.

Percutaneous biopsy of vertebral lesions whether due to neoplasia or an infection is an accurate method for making a definitive diagnosis. This can be readily repeated if initial examination of the biopsy specimen does not provide a diagnosis.

G G HARTNELL

Bristol Royal Hospital for Sick Children,
Bristol BS2 8BJ

1 Joshi KB, Prinka RA. Fine needle diagnosis in lumbar osteomyelitis. *Skeletal Radiol* 1983;10:173-5.

2 Murphy WA, Destouet JM, Gillula A. Percutaneous skeletal biopsy in 1981: a procedure for radiologist—results, review and recommendations. *Radiology* 1981;139:545-9.

Breast cancer screening

SIR,—In my article (26 March, p 909) I emphasised the need for effective quality control in breast cancer screening. I have recently read a draft copy of the quality control guidelines for mammographic screening produced by an expert subcommittee of the radiological advisory committee of the chief medical officer. The document acknowledges that professional qualification and training are not enough and that performance has to be monitored. It attempts to define limits of acceptable practice and suggests that all staff concerned in screening should participate in periodic evaluation. It also suggests that management should enforce the quality system and recommends that radiographers taking part in mammographic screening should spend at least two days a week on this work and that all people reporting mammograms should report a minimum of 6000 a year.

These criteria are more rigorous than any accepted by any other medical specialty in Britain. The fulfilment of these guidelines, however, is essential if screening is not to cause more harm than good. Many will therefore question the wisdom of introducing a service that relies on such exceptional professional control for its success. Regrettably, the guidelines will remain unfulfilled for two reasons. Firstly, they will be compromised by the professions when faced with the practical difficulties of implementing them. Secondly, the government seems set to establish a nationwide service during this parliament even though these guidelines cannot be met without more time for the recruitment and training of sufficient staff with an aptitude and interest in this narrow subspecialty.

Medical advisers should insist that no screening units are established unless the guidelines can be met. Only by this means will staff recruitment be confined to those committed enough to accept strict quality control and the government be persuaded to regard a favourable harm-benefit ratio as more important than the rapid introduction of a service.

J B WITCOMBE

Gloucestershire Royal Hospital,
Gloucester GL1 3NN

SIR,—Dr David Slater (23 April, p 1197) draws attention to the requirements for quality control in breast cancer screening programmes. An advisory committee on breast cancer screening is being set up to consider all aspects of quality assurance in breast pathology, including macroscopic examination of specimens (particularly specimen radiography) and the development of standard histological terminology and diagnostic criteria. The establishment and management of external quality

assurance schemes and resource implications for histopathology will also be considered.

Comments from pathologists are welcome.

J P SLOANE

Department of Histopathology,
Royal Marsden Hospital,
Sutton SM2 5PT

ROSEMARY R MILLIS

Guy's Hospital,
London SE1 9RT

Myocardial infarction

SIR,—Drs David P Lipkin and Colin J Reid (2 April, p 947) omit to mention a potentially important aspect of treatment—the use of magnesium. Magnesium is a potent dilator of coronary arteries and enhances the efficacy of other dilating agents.¹ Magnesium has been shown to be safe in treating acute myocardial infarction, to have value as an antiarrhythmic agent after myocardial infarction,²⁻⁴ and to be important in maintaining a normal potassium balance.^{5,6}

The authors emphasise the importance of normal potassium concentrations, but these are insufficient to exclude correctable electrolyte disturbances which can contribute to the generation of arrhythmias. Adequate magnesium concentrations are essential for the movement of potassium into cells,⁵ and the addition of magnesium to potassium infusions in a 10:1 molar ratio helps to normalise transmembrane ionic gradients and reduce urinary potassium losses.^{6,7} Normal extracellular concentrations are insufficient to minimise the tendency to postinfarction arrhythmias without adequate magnesium.

Although the use of magnesium after myocardial infarction has not gained wide acceptance in the United Kingdom, it has been shown to be efficacious.^{2,3} Treatment with magnesium after myocardial infarction is safe provided that renal function is not seriously impaired. Magnesium treatment should be considered in patients after myocardial infarction, particularly if coronary vasospasm, ventricular arrhythmias, or potassium depletion are complicating factors.

MICHAEL F RYAN

Department of Clinical Chemistry,
Queen Elizabeth Hospital,
Birmingham B15 2TH

1 Altura BM, Altura BT. Mg, Na, and K interactions and coronary heart diseases. *Magnesium* 1982;1:241-65.

2 Rasmussen HS, Norregard P, Lindene O, et al. Intravenous magnesium in acute myocardial infarction. *Lancet* 1986;i:234-6.

3 Smith LF, Heagerty AM, Bing RF, et al. Intravenous infusion of magnesium sulphate after acute myocardial infarction: effects on arrhythmias and mortality. *Int J Cardiol* 1986;12:175-80.

4 Dyckner T, Wester PO. Ventricular extrasystoles and intracellular electrolytes in hypokalaemic patients before and after correction of the hypokalaemia. *Acta Med Scand* 1978;204:375-9.

5 Ryan MP, Whang R, Yamailis W. Effect of magnesium deficiency on cardiac and skeletal muscle potassium during dietary potassium restriction. *Proc Soc Exp Biol Med* 1973;143:1045.

6 Brady H, Ryan MP, Horgan J. Magnesium: the forgotten cation. *Ir Med J* 1986;80:250-3.

7 Counihan TB, Halley E, Ryan MF, et al. The effect of magnesium sulphate administration on lymphocyte magnesium and potassium in a patient with congestive heart failure. *Ir Med Sci* 1978;147:331.

AUTHORS' REPLY,—We thank Dr Ryan for raising the question of treatment with intravenous magnesium in patients with acute myocardial infarction. We are unimpressed with the antiarrhythmic action of magnesium in this situation. Rasmussen *et al* attributed the beneficial effect of magnesium to a reduced incidence of arrhythmias,¹ but their