- 1 Beardon PHG, McGilchrist MM, McKendrick AD, McDevitt DG, MacDonald TM. Primary non-compliance with prescribed medication in primary care. *BMJ* 1993;307:846-8. (2 October.)
- 2 Begg G. Do patients cash prescriptions? An audit in one practice. *J R Coll Gen Pract* 1984;34:272-4.
- 3 Rashid A. Do patients cash prescriptions? *BMJ* 1982;284:24-6.

Lp(a) lipoprotein and impaired glucose tolerance

Association poorly investigated

EDITOR,—M Farrer and colleagues recently investigated the association between impaired glucose tolerance and Lp(a) lipoprotein concentration in relation to coronary artery disease.¹ Although the subject was reasonable to investigate, we were disturbed by the statistical methods they used and by the conclusions they drew. In particular, the study design did not directly address the specific objective of assessing the relation between glucose tolerance and raised Lp(a) lipoprotein concentrations in subjects with coronary artery disease. We wonder why they included a group of 517 apparently healthy subjects. We are concerned that the majority of subjects were lost because of the matching of cases and controls, resulting in a primary analysis of some 39 asymptomatic subjects and 102 patients whose representation of the target population was questionable when selection bias is taken into account. Furthermore, the use of *t* tests and analyses of variance to analyse the data assumes a causal relation between the factors, which is not the same as the hypothesis of an association. We suggest that it would have been more appropriate to compute and test Pearson's correlation coefficient for all subjects to assess the association of interest without matching subjects or assuming a specific relation.

Further issues include the use of a geometric mean rather than a more common statistic to summarise the transformed variables. Farrer and colleagues state that the study had 95% power to detect an effect in subjects with coronary artery disease (without specifying the size of the effect), implying that an effect rather than an association was the objective. In addition, since 23% of asymptomatic subjects with normal glucose tolerance had high concentrations of Lp(a) lipoprotein the power to detect a fivefold higher prevalence was not meaningful. Finally, even with the appropriate statistics and more confident data, retrospective case-control studies such as this should at best generate hypotheses: they should not be the basis on which to draw definitive conclusions.

ANDREW C G UPRICHARD
LINDA SHURZINSKE

2800 Plymouth Road,
Ann Arbor, MI 48105,
USA

- 1 Farrer M, Game FL, Albers CJ, Neil HAW, Winocour PH, Laker MF, et al. Association between impaired glucose tolerance and circulating concentration of Lp(a) lipoprotein in relation to coronary heart disease. *BMJ* 1993;307:832-6. (2 October.)

Authors' reply

EDITOR,—Andrew C G Uprichard and Linda Shurzinske are correct to point out potential limitations in epidemiological studies of performing analyses that were not prospectively identified when subjects were recruited. The information from such analyses in the Framingham study and others shows, however, that their argument should not deter epidemiologists when the population(s) studied can provide useful insights into testing as well as generating hypotheses.

Our study was in response to a previous study of subjects with no known coronary artery disease which found a fivefold increase in the proportion

of subjects with impaired glucose tolerance who had concentrations of Lp(a) lipoprotein above 300 mg/l (25% of those with impaired glucose tolerance v 5% of those with normal glucose tolerance).¹ The null hypothesis was that impaired glucose tolerance was not associated with high concentrations of Lp(a) lipoprotein (as a postulated mechanism for the association between impaired glucose tolerance and coronary artery disease in British studies).^{2,3} The size of the effect observed by Davies *et al* would be clinically important and we therefore examined this hypothesis in our study populations. In patients with established coronary artery disease, however, high Lp(a) lipoprotein concentrations could theoretically be caused by atherosclerotic disease rather than be a cause of atherosclerosis. If the high concentrations were caused by the disease the effect of impaired glucose tolerance may be overwhelmed by it. A control group free of coronary artery disease was therefore essential. It also allowed the hypothesis of Davies *et al* to be tested in a similar population to theirs.

We showed that the population samples used are representative, and far from losing data we have analysed all subjects as well as subgroups, appropriately selected to test the size of effect suggested by Davies *et al* with the stated power. We showed that subgroups of impaired glucose tolerance had the expected characteristics with respect to the metabolic syndrome (syndrome X) but no difference in Lp(a) lipoprotein concentration. The prevalence of high Lp(a) lipoprotein concentrations (>300 mg/l) in subjects with normal glucose tolerance was 23% in our study of 504 asymptomatic subjects compared with 5% of 36 subjects studied previously. This finding leads to the different conclusions from the two studies.

We used geometric means because Lp(a) lipoprotein concentration is highly positively skewed and log transformation normalised the distribution. The use of parametric statistics to examine differences between geometric mean values is therefore appropriate for the stated hypothesis testing. Two paragraphs are devoted to Pearson correlation coefficient data, but we were concerned that there might be a threshold effect (analogous to the relation between microangiopathy and diabetes mellitus but not impaired glucose tolerance), and this has also been sought. To show a lack of association with certainty is difficult, but in our study the null hypothesis stands; if a real association has been missed we suggest that it is small and unlikely to be important.

M FARRER

Cardiothoracic Centre,
Freeman Hospital,
Newcastle upon Tyne NE7 7DN

F L GAME
P H WINOCOUR
M F LAKER
K G M M ALBERTI

Departments of Clinical Biochemistry and Medicine,
University of Newcastle upon Tyne,
Newcastle upon Tyne NE1 4HH

Department of Cardiology,
Royal Victoria Infirmary,
Newcastle upon Tyne NE1 4LP

C J ALBERS
P C ADAMS

H A W NEIL

Department of Public Health and Primary Care,
University of Oxford,
Oxford OX2 6HE

- 1 Davies M, Rayman G, Day J. Increased incidence of coronary disease in people with impaired glucose tolerance: link with increased lipoprotein(a) concentrations? *BMJ* 1992;304:1610.
- 2 Fuller JH, Shipley MJ, Rose G, Jarrett RJ, Keen H. Coronary heart-disease-risk and impaired glucose tolerance: the Whitehall study. *Lancet* 1980;i:1374-6.
- 3 Jarrett RJ, McCartney P, Keen H. The Bedford survey: ten year mortality rates in newly diagnosed diabetics, borderline diabetics and normoglycaemic controls and risk indices for coronary heart disease in borderline diabetics. *Diabetologia* 1982;22:79-84.
- 4 Pettitt DJ, Knowler WC, Lisse JR, Bennett PH. Development of retinopathy and proteinuria in relation to plasma glucose concentration in Pima Indians. *Lancet* 1980;ii:1050-2.

Potassium depletion and rhabdomyolysis

EDITOR,—In his report of rhabdomyolysis complicating the diabetic hyperosmolar state G M Lord discusses the possible causes of muscle cell injury and concludes that hypophosphataemia, though relevant, is insufficient by itself to cause rhabdomyolysis.¹ Deficiency of total body potassium—a frequent complication of hyperosmolar and hyperglycaemic states—may also be implicated in the pathogenesis of rhabdomyolysis; it has been suspected in diabetic patients with rhabdomyolysis and hyperosmolality.

Further evidence for the pathogenetic relevance of potassium depletion comes from occasional reports of rhabdomyolysis complicating hypernatraemic hyperosmolar states in non-diabetic patients.^{2,5} Tuller reported inappropriate urinary loss of potassium and phosphate in patients who did not develop oliguria;² Ulvila and Nesson pointed out the similarities of myoglobinuria due to potassium depletion and that due to hypernatraemia;³ and two of the children reported on by Opas *et al* were hypokalaemic at presentation,⁴ as was the patient of Bateman *et al* with probable lithium induced nephrogenic diabetes insipidus.⁵ Concurrently, low phosphate concentrations were also found in some of these patients.^{2,5}

Hypokalaemia, like hypophosphataemia, has been shown experimentally to reduce muscle cell transmembrane voltage (as predicted by the Nernst equation) and to cause muscle cell damage. Hence a combination of hypokalaemia and hypophosphataemia, although often masked by muscle cell lysis, may be the key biochemical derangement leading to muscle cell injury in hyperosmolar states.

ANDREW J LARNER

Department of Anatomy,
University of Cambridge,
Cambridge CB2 3DY

- 1 Lord GM. Diabetes and rhabdomyolysis: a rare complication of a common disease. *BMJ* 1993;307:1126-8. (30 October.)
- 2 Tuller MA. Acute myoglobinuria with or without drug usage. *JAMA* 1971;217:1868.
- 3 Ulvila JM, Nesson VJ. Hypermnatremia with myoglobinuria. *Am J Med Sci* 1973;265:79-81.
- 4 Opas LM, Adler R, Robinson R, Lieberman E. Rhabdomyolysis with severe hypernatremia. *J Pediatr* 1977;90:713-6.
- 5 Bateman AMS, Lerner AJ, McCartney SA, Rifkin IR. Rhabdomyolysis associated with lithium-induced hyperosmolar state. *Nephrol Dial Transplant* 1991;6:203-5.

Imaging methods used in aortic dissection

EDITOR,—In the second of their articles on chest radiographs in emergency radiology D W Hodgkinson and colleagues state that the diagnosis of aortic dissection depends ultimately on arteriography.¹ This traditional view has become outdated with the introduction of quicker, less invasive methods that provide more detailed images. These include transoesophageal echocardiography, computed tomography, and magnetic resonance imaging. Arteriography is slow and invasive, carries considerable risk, and may be non-diagnostic.²

The optimal imaging technique has been the subject of much interest recently.^{3,5} The plain radiographic signs are non-specific and unreliable. The most impressive of the modern imaging techniques for diagnosing either acute or chronic dissection is magnetic resonance imaging.⁴ Its accuracy in diagnosis and in defining the morphological and haemodynamic features of the aortic dissection is unsurpassed.⁵ However, its limited availability, the fact that it cannot be used at the bedside, and the time that it takes make it inappropriate for use in acute cases. Transoeso-

phageal echocardiography is almost as sensitive but less specific than magnetic resonance imaging. Visualisation of the upper ascending aorta, arch, and proximal head and neck vessels may be limited. In addition, it cannot visualise the aorta outside the chest. It has important advantages, however, in that it is widely available, safe, and quick and can be used at the bedside. Contrast enhanced computed tomography provides an alternative approach but is not as accurate as magnetic resonance imaging or transoesophageal echocardiography.³ In particular, it is unreliable for detecting the entry site.

In practice, the diagnostic method chosen will depend on the facilities available and the condition of the patient. For critically ill patients transoesophageal echocardiography should be considered first. It can be carried out immediately, provides accurate information, and does not put patients at risk because they do not have to be moved from intensive care facilities. Magnetic resonance imaging is better for establishing the diagnosis in patients with suspected chronic dissection and for following up surgical intervention. When these methods are not available because of lack of equipment or trained staff, computed tomography is a viable alternative. There is now little place for arteriography in the diagnosis and management of acute or chronic aortic dissection.

C M FRANCIS
G R SUTHERLAND
C M TURNBULL

Western General Hospital,
Edinburgh EH4 2XU

- Hodgkinson DW, O'Driscoll BR, Driscoll PA, Nicholson DA. Chest radiographs. II. *BMJ* 1993;307:1273-7.
- Erbel R, Engberding R, Daniel W, Roelandt J, Visser C, Rennelet H, et al. Echocardiography in diagnosis of aortic dissection. *Lancet* 1989;i:457-61.
- Khandheria DK. Aortic dissection. The last frontier. *Circulation* 1993;87:1765-8.
- Nienaber CA, Spielmann RP, von Kodolitsch Y, Siglow V, Piepho A, Jaup T, et al. Diagnosis of thoracic dissection. Magnetic resonance imaging versus transoesophageal echocardiography. *Circulation* 1992;85:434-47.
- Nienaber CA, von Kodolitsch Y, Nicolas V, Siglow V, Piepho A, Brockhoff C, et al. The diagnosis of thoracic aortic dissection by noninvasive imaging procedures. *N Engl J Med* 1993;328:1-9.

Training for house officers

EDITOR,—In a survey of preregistration house officers in eight English regions Jonathan H Gillard and colleagues found that 61% of respondents disagreed or strongly disagreed with the prospect of four months in general practice in the preregistration year.¹ Lisson Grove Health Centre has been taking preregistration house officers from St Mary's Hospital, London, for four month rotations in general practice since 1981. The 30 doctors who did the rotation in the first 10 years of the scheme were recently sent a questionnaire to evaluate it; 26 questionnaires were returned (response rate 87%). When asked if they would recommend the general practice rotation to a friend 24 respondents (92%) said yes, compared with 57% in Gillard and colleagues' study. Another question asked if the doctors had ever regretted missing four months of hospital medicine and surgery; 25 respondents had not. The general practice house officers work a 40 hour week (excluding on call), receive up to three hours of individual tuition a week, and spend nearly 60% of their working day with patients.

I conclude that house officers who have no direct experience of preregistration house jobs in general practice are, understandably, nervous about the prospect. Doctors who have experienced such a rotation have a different view. I find it particularly sad that the doctors questioned in Gillard and colleagues' study had negative views about a house job in general practice when they were critical of

their hospital rotations. A house job in general practice would at least provide them with an opportunity to explore an alternative to house jobs in hospital. Gillard and colleagues discussed the educational implications of their findings: there were serious deficiencies in the education the house officers received in post; and the house officers performed inappropriate tasks and worked excessive hours.

If changes are required to improve the quality of the preregistration year (more contact with patients, more teaching specifically for house officers, a shorter working day, fewer inappropriate duties) I suggest that introducing a general practice rotation would be an effective way of doing this.

JOE WILTON

Lisson Grove Health Centre,
London NW8 8EG

- Gillard JH, Dent THS, Aarons EJ, Smyth-Piggott PJ, Nicholls MWN. Preregistration house officers in eight English regions: survey of quality of training. *BMJ* 1993;307:1180-4. (6 November.)

Standards of care should not depend on the patient's status

EDITOR,—In writing about a patient who changed his practice Robert Wilkins describes an unfortunate episode of poor medical care.¹ The idea that standards of medical care should not depend on the status of the patient is clearly sound. The idea that one's medical colleagues—brilliant or otherwise—should be treated like everyone else seems, however, to be an oft repeated myth. The problem lies not with our inability to ignore such matters but with the notion of uniform practice applied to everyone else. The world is not divided into doctors and the rest but rather into a huge diversity of people, who merit equivalent standards of care individualised according to many factors, one of which will often be occupation. To discuss more fully a sore throat with an opera singer or a painful knee with a carpet fitter is perfectly proper. It is to regard some patients as less important than others that is blameworthy.

JAMES GILBERT

Exeter and District Hospice,
Exeter EX2 5JJ

- Wilkins R. An uncomfortable surprise. *BMJ* 1993;307:1201. (6 November.)

Health in Israeli occupied territories

EDITOR,—The Association of Israeli-Palestinian Physicians for Human Rights cannot support the sanguine picture of health services in Gaza painted by M Shani and T H Tulchinsky.¹ We regularly see avoidable medical tragedies arising out of major deficiencies in the health care provided and because the concerns of military occupation are placed above the needs of even critically ill patients.

The authors state that all health services are free for small children up to the age of 3 in Gaza and the West Bank and that treatment is provided in Israeli hospitals when services are not available locally. One of many counter examples handled by the Association of Israeli-Palestinian Physicians for Human Rights, however, was of Tukiq Hassib, a 2 year old boy who needed urgent treatment for a metabolic disorder that was unobtainable in the occupied territories. The authorities had refused him treatment in Israel on the grounds that its

liability was limited to the territories. To minimise delay we gave Tufiq's family the funds to buy government health insurance on the understanding that he might then be accepted for treatment in Israel, but he died before this could begin.

We do not agree with the assertion that ambulances from Gaza and the West Bank have unhindered access to Israeli hospitals, including during the curfew. After the territories were sealed off Rula Shriteh, a 4 year old girl from Gaza with internal bleeding after a traffic accident, was held up for three hours before her family could locate an ambulance driver who would risk taking her to an Israeli hospital without a permit. The father of a 15 year old boy who had died in hospital in Israel was forced to carry the body through a checkpoint on foot since no Palestinian ambulance was allowed through. Ambulances in Gaza and the West Bank are forbidden to carry communications equipment, which rules out a swift response to urgent calls or transmission of details about critically ill casualties.

Per capita expenditure on health care in Israel is around \$500; in the occupied territories it is \$18-23. There were 6.1 hospital beds/1000 people in Israel in 1992; in the occupied territories there were 1.1 (only half the figure in 1975). Gains in some aspects of health care, such as infant mortality and immunisations, cannot offset the overall consequences of such disparities in the provision of health care for the 800 000 residents of Gaza. This is the health service that Israel will bequeath to Palestinian management in accordance with the peace agreement. The Association of Israeli-Palestinian Physicians for Human Rights believes that Israel has a responsibility to help provide for the upgrading and development of the health service, and to this end we have submitted our proposals to the current Israeli-Palestinian negotiations.

RELA MAZALI

Association of Israeli-Palestinian Physicians for Human Rights,
PO Box 10235,
Tel-Aviv 61101,
Israel

- Shani M, Tulchinsky TH. Health in Gaza. *BMJ* 1993;307:509. (21 August.)

Somatoform pain disorder after road traffic accidents

EDITOR,—Brian Dalal and Glynn Harrison provide a fine example of the problems that afflict medicolegal psychiatry nowadays.¹ The first is the compulsion to reject the simple in favour of the complex; the second is the propensity to reinterpret perfectly understandable human behaviour in terms of psychopathology and append a psychiatric label, which adds to the mystique of psychiatry and glorifies the diagnostic status of the psychiatrist. Thus, although people may consult a cardiologist, a neurologist, a chest physician, or an endocrinologist and be told that there is nothing wrong with them, it is virtually impossible for anyone to leave a psychiatrist's consulting room without having had some label attached.

All plaintiffs in actions to recover damages for personal injury are well aware that the more they complain the more money they will get. How, then, can Dalal and Harrison be so confident that the 15 subjects who had unexplained pain were "suffering" from the "recommended" diagnostic term of somatoform pain disorder. Might they not, quite simply, have been making heavy weather of their complaints, knowing full well the advantages of so doing?

Dalal and Harrison do not tell us the therapeutic benefit derived by those who received antidepressants for their unexplained pain. How do Dalal and