Correspondence

Hypothermic protection (26°–25°C) without perfusion cooling for surgery of congenital cardiac defects using prolonged occlusion.

SIR,—The use of periods of circulatory arrest under the protection of profound hypothermia (less than 20°C) is a well established technique to permit surgery that may be impossible on cardiopulmonary bypass. The time limits are debatable, so the statement by Professor EE Litasova and Dr VN Lomivorotov (March 1988;**43**:206–11) that "The results obtained without perfusion under deep (26–25°C) hypothermic protection suggest that 75 minutes is a safe time, in terms of brain damage, for circulatory arrest" merits critical attention. 25–26°C is quite a modest degree of hypothermia at which to seek prolonged cerebral protection from ischaemia and 75 minutes is a long period of circulatory arrest by any standards.

The anaesthetic and surgical techniques are detailed in the "Methods" section but no criteria or objective methods for establishing neurological function were employed. It appears that time to waking has to suffice. The issue of ischaemic brain damage is largely side stepped by attributing unsatisfactory outcome to air embolism or poor myocardial function. A relation was detected between duration of ischaemic time and the number of neurological complications that were recognised, and even by these rather generous criteria it does not suggest that "75 minutes is a safe time."

The authors provide nine references, of which six are to Russian publications. Their key reference, from 1963, is fully a quarter of a century old and maybe none the worse for that, but it may be! The use of circulatory arrest with surface cooling was well established in the 1950s. On the basis of oxygen consumption data—for example, those provided by Ross[1]—circulatory arrest for up to 10 minutes at 30°C was considered acceptable. Abiding by these guidelines, Sellors closed hundreds of atrial septal defects with circulatory arrest, mostly within 4–5 minutes.[2] Various combinations of surface and perfusion cooling were employed to cool to below 20°C to extend the time available and it became accepted teaching that this gave up to an hour of protection.

I reviewed the available clinical and experimental data concerning circulatory arrest at 18–20°C and found that the weight of evidence suggested that central nervous system damage was highly likely by an hour and could be demonstrated with increasing risk beyond 40 minutes.[3] Experimental work performed at the University of Alabama supported these conclusions[4] and others who have published on the subject since then have agreed with us.[5,6] It seems inherently unlikely that the anaesthetic and surgical protocols described in this paper provide protection for nearly twice as long at a temperature substantially warmer. The sparse neurological evidence provided is insufficient to convince me otherwise.

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Thyroid function and endocrine abnormalities in elderly patients with severe chronic obstructive lung disease

SIR,—We read with interest the paper by Dr S Gow and colleagues (July 1987;**42**:520–5) on endocrine abnormalities in elderly patients with chronic obstructive lung disease. Their summary concludes that "general effects of age and illness may be more important than the direct effect of hypoxia in determining hypothalamic-pituitary function in elderly patients with chronic lung disease."

As it is well known that the testis starts to fail in old age (with a rise in follicle stimulating hormone and luteinising hormone), it is not surprising that this "normal failure" will mask any other factors that may tend to lower testosterone production. We feel sure therefore that the failure of Dr Gow and her colleagues to find a correlation between serum testosterone concentrations and degree of hypoxia in their more aged hypoxic men with chronic obstructive lung disease is simply a function of age and explains the apparent discrepancy between their results and ours.

Of more interest to us is whether endocrine abnormalities occur in patients with chronic obstructive lung disease before the age that endocrine abnormalities might normally be expected. Our studies[1] suggested that they do, the most consistent being low serum testosterone concentrations that correlate with arterial oxygen tension (Pao_2) in our patients under the age of 70. Indeed, 22 patients aged 35–57 years with a mean Pao_2 of 6·91 kPa had lower serum testosterone values than older patients aged 59–70 years with a mean Pao_2 of 6·66 kPa (serum testosterone mean for younger 9·68 and for older 11·88 mmol/l). If aging were an important causal factor under the age of 70 we would have expected older patients to have had lower serum testosterone values for a similar reduction in Pao_2.

In a further series of 18 male patients with a mean age of 62 (range 47–72) years with chronic obstructive lung disease (Dobson *et al*, unpublished observation) we have confirmed the positive correlation between Pao_2 and serum testosterone ($r = 0·656$, $p = 0·004$), but have been unable to show a correlation between testosterone and age ($r = 0·006$; $p > 0·05$).

We noted that two hypoxic patients with chronic obstructive lung disease aged 42 and 63 years studied by Dr Gow and colleagues did indeed have low testosterone concentrations with lack of obviously raised luteinising hormone. This suggests hypothalamic or pituitary suppression but gonadotrophin releasing hormone stimulation studies were not

performed. Their conclusion that "reduced gonadotrophin secretion was not found in our patients with chronic obstructive lung disease" must therefore be interpreted with caution. It is likely that the source of the gonadotrophin abnormality in patients with chronic obstructive lung disease results from a variation in the amplitude or frequency (or both) of gonadotrophin releasing hormone release, so that single serum follicle stimulating hormone and luteinising hormone results are of limited value.

With regard to other endocrine studies in chronic obstructive lung disease, Dr Gow and her colleagues confirm our findings of occasional pituitary suppression of thyroid stimulating hormone release and occasional elevation of prolactin. As in our studies, these were not consistent findings and did not correlate with Pao_2 levels. This is not to say, however, that hypoxia is not a contributary factor in individual patients.

We believe that the findings of Dr Gow and colleagues are in keeping with our own and there is nothing in the paper to contradict our view that hypoxia may be a suppressive factor in hormone production, especially testosterone, in chronic obstructive lung disease.

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1 Semple P d'A. *Clinical, endocrine and metabolic studies in medical conditions characterised by hypoxia.* MD thesis, University of Glasgow, 1984.

AUTHORS' REPLY We agree with most of the points made by Dr Semple and others. Hypoxia may well be a factor in suppression of hormone production, particularly testosterone, in chronic obstructive lung disease in patients aged under 70 years. Our study, however, was carried out in an unselected group of inpatients admitted to a respiratory unit. Their average age was 73 (range 57–83) years, which we think is representative of most patients with chronic obstructive lung disease.

Our findings suggest that in such "elderly patients" the general effects of age and illness may be more important than direct effects of hypoxia on endocrine function.

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Sarcoidosis possibly predisposing to disseminated histoplasmosis

SIR,—Dr J G Tebib and colleagues (January 1988;**43**:73–4) report disseminated histoplasmosis in a patient with endothoracic sarcoidosis. The diagnosis of sarcoidosis was based on radiographic and clinical evidence, histology of the lymph node biopsy specimens, lymphocytosis in alveolar lavage fluid, and raised serum concentrations of angiotensin converting enzyme (ACE). It should be noted, however, that none of these findings is pathognomonic and serum ACE levels especially may be increased with histoplasmosis.[1]

This observation also brings up the problem of superinfection in sarcoidosis, where cellular immunity is decreased. Among the numerous publications on this subject, the paper by Winterbauer[2] looked at 122 patients with sarcoidosis and concluded that only superinfection with aspergillosis appears to be more frequent in patients with sarcoidosis. This paper summarised 26 studies dealing with the association of sarcoidosis and fungal infections. In only 14 of these was there a causal association. In fact, the diagnosis of sarcoidosis may be proposed too frequently, especially in cases of fungal infection. This is especially true when the delay between the diagnosis of sarcoidosis and the fungal infection is less than one year.

Corticosteroid treatment in a patient with sarcoidosis is a major cause of immunodepression, as noted in a report of a parasitic infection in patient treated with corticosteroids for sarcoidosis.[3] The paper by Dr Tebib and his colleagues is of interest because treatment with corticosteroids was not started until late in the course of the disease and, although it most likely contributed to the acute presentation of the disease, it cannot be considered to have been a major causative factor in the immunodepression. Another interesting aspect of this article is that, along with the increased frequency of opportunist infections, certain "exotic" diseases are becoming cosmopolitan.

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Mesenchymoma of the lung

SIR,—We read with interest an article by Dr JMM van den Bosch and colleagues (October 1987;**42**:790–3), in particular the short report of two recurrent tumours. The literature survey shows that this is a highly unusual occurrence[1 2] and where they have been noted they were usually associated with multiple hamartomas.

We should like to report another case of recurrence. In 1979 a 57 year old man was found to have a rounded opacity in the right upper lobe on routine chest radiography. At thoracotomy a 1 cm hamartoma was enucleated and histological examination confirmed the clinical diagnosis, show-