

Patients	No oral contraceptive intake (n=28)	High-dose oral contraceptive intake (n=46)	Low-dose oral contraceptive intake (n=98)	High-dose and low-dose oral contraceptive intake (n=33)	Progestagen intake (n=11)
Mean (range) age (years)	29 (17-52)	38 (26-51)	32 (16-49)	35 (23-52)	33 (20-53)
Mean (range) duration of intake	..	8.3 (4 mo to 25 yrs)	7.2 (6 mo to 21 yrs)	7.4 (9 mo to 28 yrs)	3.2 (3 mo to 6 yrs)
<b>FNH lesions</b>					
Mean (range) number	1.1 (1-4)	1.3 (1-6)	1.4 (1-9)	1.3 (1-6)	1.0
Mean (range) diameter (mm)	63 (10-120)	63 (15-150)	66 (10-180)	66 (10-145)	54 (15-110)

### Characteristics of patients

size (3.2 cm and 2.0 cm, respectively) and increased in size (3 cm) in one lesion. In the 25 women who continued with oral contraceptives, size of FNH changed in only one patient who initially presented with two lesions (3.0 cm and 2.2 cm, respectively). Despite continuation of oral contraceptives, the largest FNH disappeared 2 years after the first diagnosis, whereas the other FNH remained unchanged. Moreover, during this follow-up study, 12 women became pregnant; no increase in lesion size was seen during pregnancy or follow-up of a median of 32 months (11 months to 5 years) after the pregnancy.

Our findings show that low-dose oral contraceptives can be maintained in young women with FNH.

- 1 Wanless IR, Mawdsley C, Adams R. On the pathogenesis of focal nodular hyperplasia of the liver. *Hepatology* 1985; **6**: 1194-200.
- 2 Weimann A, Mössinger M, Fronhoff K, Nadalin S, Raab R. Pregnancy in woman with observed focal nodular hyperplasia of the liver. *Lancet* 1998; **351**: 1251-52.
- 3 Mathieu D, Rahmouni A, Anglade MC, et al. Focal nodular hyperplasia of the liver: assessment with contrast-enhanced turboFLASH MR imaging. *Radiology* 1991; **180**: 25-30.
- 4 Cherqui D, Rahmouni A, Charlotte F, et al. Management of focal nodular hyperplasia and hepatocellular adenoma in young women: a series of 41 patients with clinical, radiological and pathological correlations. *Hepatology* 1995; **22**: 1674-81.

Departments of Radiology (D Mathieu; e-mail dmathieu@univ-paris12.fr) Surgery, and Hepatology, Henri Mondor Hospital and University Paris 12, 94010 Paris, Créteil, France

## Ambient temperatures and potassium concentrations

Thomas J Ulahannan, John McVittie, John Keenan

Data from family physicians have shown a significant inverse correlation between daily temperatures and mean potassium concentrations.<sup>1</sup> High ambient temperatures were thought to stimulate cellular uptake of potassium. No such correlation was, however, apparent for hospital samples analysed during 8 months. We aimed to find out whether significant negative correlation between ambient temperatures and laboratory potassium concentrations for hospital patients could be shown by longer observation, taking into account distance to the laboratory.

We obtained mean daily temperatures recorded in central Oxford between April 1, 1996, and Dec 31, 1997. We also obtained details of mean daily potassium concentrations from four Oxford city hospitals and family physicians in Oxfordshire for the same time. 640 days of observations were available for analysis. We calculated correlations between daily mean temperatures and mean potassium concentrations. All blood samples, including those collected by family physicians, were analysed at site A, except for those from site C, which were processed immediately in that hospital. We used samples from all hospitals in Oxford that received acute medical admissions. Participating laboratories had continuous quality-control measures in place. We calculated correlation coefficients between daily mean dry bulb temperatures recorded by the Department of

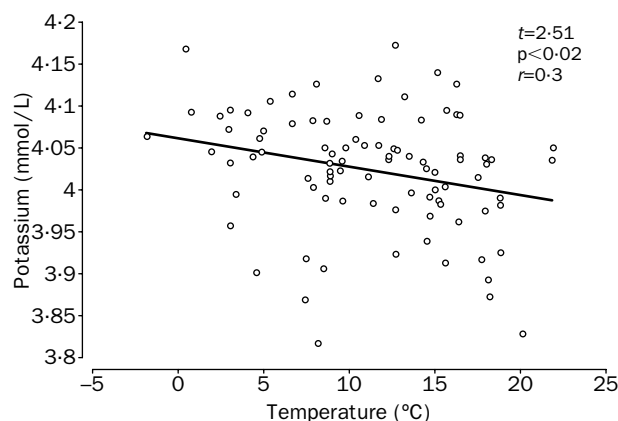
Geography, University of Oxford at the Radcliffe Observatory, and the daily mean potassium concentration for each site or the samples from family physicians. We calculated p values with a two-tailed *t* test.

As noted by Masters and colleagues<sup>1</sup> we found a trend towards lower mean daily potassium concentrations at higher ambient temperatures:

Site (km)	<i>r</i>	<i>p</i>	Distance from laboratory
A	-0.03	<0.5	0
B	-0.07	0.1> <i>p</i> >0.05	0.05
C	-0.02	>0.5	0
D	-0.19	<0.001	8
E	-0.16	<0.001	7
F	-0.09	<0.05	8
Family physician	-0.33	<0.001	Variable

The correlation was strongest for samples obtained by family physicians ( $r=-0.33$ ), but was weaker than that reported by Masters and colleagues. Hospitals further from laboratories had stronger significant correlations with ambient temperature (figure), but the range of correlation coefficients from -0.09 to -0.19 suggests that ambient temperatures were not major determinants of the potassium concentrations for these samples. The slope of the correlation line for family physician samples equates to a reduction in mean potassium concentrations of 0.02 mmol/L for each degree rise in ambient dry bulb temperature (SE 0.002).

The results lead to certain implications. In cases of borderline hypokalaemia, clinicians should find out whether the sample was delayed between collection and analysis. This possibility should be considered even for samples from inpatients, especially if the laboratory is not on site. A 10°C rise in temperature, which is possible even in temperate climates, could produce up to 0.2 mmol/L decrease in potassium concentration. In patients treated with diuretics, potassium concentrations might decrease to less than the reference range. This finding may also explain partly the higher number of decreased potassium concentrations that are observed during the summer months. Coronary-care



Mean serum potassium (pooled) at distant sites D, E, and F versus mean daily temperature in Oxford

units that administer potassium to patients at certain predetermined low potassium concentrations may be affected by such a correlation. Laboratories with data that show significant negative correlations between ambient temperature and potassium concentrations should consider whether standard temperature adjustments are warranted for their populations of patients. When hyperkalaemia is detected samples are generally assessed visually for haemolysis. Measurement of other variables such as lactate dehydrogenase may be beneficial. If a sample is borderline hyperkalaemic and was delayed in a high ambient temperature before analysis, then the potential exists for artefactual normokalaemia.

Clinicians and laboratory specialists should, therefore, be aware of potential pitfalls in the interpretation of measurements such as potassium and ensure that all samples are analysed with minimum delays.

We thank Maria Shagadanova of the Department of Geography, University of Oxford for supplying climatic data.

- 1 Masters PW, Lawson N, Marenah CB, Maile LJ. High ambient temperature: a spurious cause of hypokalaemia. *BMJ* 1996; **312**: 1653–59.

Oxford Diabetes and Endocrinology Centre, Radcliffe Infirmary, Oxford; and Diabetes Centre, Stoke Mandeville Hospital, Aylesbury HB21 8AL, UK (T J Ulahannan)

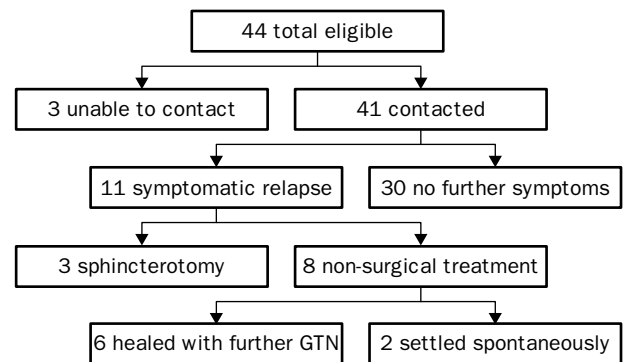
## Follow-up of patients with chronic anal fissure treated with topical glyceryl trinitrate

Jonathan N Lund, John H Scholefield

Topical glyceryl trinitrate (GTN) has been shown to be an effective treatment for chronic anal fissure, healing over two thirds of patients after 8 weeks of treatment.<sup>1</sup> It is thought that healing is mediated by increased blood supply to the site of the fissure after surgical or “chemical” sphincterotomy with GTN.<sup>2</sup> However, unlike surgical sphincterotomy, treatment with topical GTN has no permanent effect on the internal anal sphincter and return to pretreatment pressures of the sphincter has been shown by 3 months after initial healing.<sup>3</sup> Some investigators have expressed concern that return to high sphincter pressures means that the likelihood of relapse is high. No long term follow-up of patients treated with topical GTN has yet been reported.

Patients whose chronic anal fissures had healed in two previously reported trials of topical GTN were identified and contacted by telephone.<sup>1,4</sup> Patients were asked from a standardised questionnaire whether they had experienced further symptoms of pain on defaecation and rectal bleeding since the end of the trial. If such symptoms were reported, patients were asked about the number and duration of relapses. They were also asked whether they had sought medical attention and how their relapse had been treated.

44 patients were identified from the previous studies; three had moved from the area and could not be contacted. The questionnaire was administered to 41 patients. Follow-up interval was a median 28 (range 24–38) months. Outcome is shown in the figure. Of those reporting recurrent symptoms, five had only one episode and six had more than one. Five symptomatic relapses were of short duration (1–3 days), two settled spontaneously, and the other three were treated by a further course of GTN. In all three cases the GTN used was left over trial medication. Of the longer relapses, one patient opted to have a sphincterotomy without further treatment, three responded to further GTN treatment, and two required sphincterotomy after failure of GTN treatment.



### Long-term follow-up of patients

This study shows that most patients whose chronic anal fissure initially heals after treatment with topical GTN either do not experience further problems or occasional recurrent symptoms of short duration. Of the 41 patients contacted, 38 have avoided operative treatment after a median follow-up of over 2 years. Recurrent symptoms have quickly responded to further topical GTN in 73% of cases. It may be that patients who experience recurrent symptoms of pain and bleeding on defaecation after an initial diagnosis of anal fissure has been made could treat themselves with a supply of ointment obtained from their general practitioner and kept in the home.

- 1 Lund JN, Scholefield JH. A randomised, prospective, double-blind, placebo-controlled trial of glyceryl trinitrate ointment in the treatment of anal fissure. *Lancet* 1997; **349**: 11–14.
- 2 Schouten WR, Briel JW, Auwerda JJA, De Graf EJR. Ischaemic nature of anal fissure. *Br J Surg* 1996; **83**: 63–65.
- 3 Lund JN, Scholefield JH. Internal sphincter spasm in anal fissure. *Br J Surg* 1997; **84**: 1723–24.
- 4 Lund JN, Armitage NC, Scholefield JH. Use of glyceryl trinitrate ointment in the treatment of anal fissure. *Br J Surg* 1996; **83**: 776–77.

Department of Surgery, University Hospital, Nottingham NG7 2UH, UK (J N Lund)

## Detection of *Mycobacterium tuberculosis* in nasopharyngeal aspirate samples in children

Luis Miguel Franchi, Rosa I Cama, Robert H Gilman, Sonia Montenegro-James, Patricia Sheen

At the Institute de Salud del Niño in Lima, Peru, most cases of pulmonary tuberculosis are diagnosed and referred to peripheral health centres for treatment. Tuberculosis, however, caused 137 admissions in 1996, of whom 45% were children younger than 5 years.<sup>1</sup> Paediatric tuberculosis is difficult to diagnose, and is generally made on the basis of clinical and epidemiological criteria, including signs and symptoms, chest radiography, percussion and postural drainage, and, most importantly, history of close contact with a patient with pulmonary tuberculosis.<sup>2</sup> Bacteriological confirmation, however, is more difficult. Children are commonly infected with a small load of *Mycobacterium tuberculosis* and generally they cannot produce an adequate sputum sample. For this reason, 50–60% of children may be diagnosed with pulmonary tuberculosis in the absence of a positive culture or sensitivity testing. Because there is no efficient way to confirm the diagnosis, uninfected children may be treated unnecessarily, especially in areas with a low prevalence. Alternative ways of obtaining bronchial secretions are used to improve the yield of culture results;