upper airway obstruction (such as a cold), sedative drugs at night, and obesity.

A wide range of symptoms and signs has been associated with obstructive sleep apnoea. Direct effects during sleep include restlessness, unusual postures, snoring, apnoeic pauses, and bedwetting, and symptoms during the day include difficulty in waking, somnolence, and bad behaviour. Important indirect features include failure to thrive, developmental delay, and pulmonary hypertension and congestive heart failure because of repeated episodes of hypoxaemia.

In Down's syndrome several factors predispose to obstructive sleep apnoea, including crowding of the pharynx by the large, posteriorly placed tongue and by lymphoid hyperplasia and the presumed reduction in pharyngeal muscle tone that is part of a generalised hypotonia. In addition, children with Down's syndrome are often snuffly or overweight or both. Recognition of obstructive sleep apnoea in Down's syndrome is complicated by coexisting congenital heart disease, which provides a ready explanation for pulmonary hypertension, and by intellectual impairment, which may mask the adverse developmental effects of recurrent nocturnal hypoxaemia. Nevertheless, several groups have recognised the predisposition to obstructive sleep apnoea of children with Down's syndrome,^{1,4} and the association has been recorded in an excellent book summarising the current approaches.⁵

In a recent report on the subject Southall and his colleagues made polygraphic recordings overnight in hospital on 12 children with Down's syndrome and compared the findings with observations made at home on 20 healthy children.⁶ Six of the 12 patients had episodes of hypoxaemia, hypercapnia, or an abnormal breathing pattern. Upper airway obstruction was confirmed by fibreoptic endoscopy under light anaesthesia. Five of the six children with sleep disruption had symptoms, but we are not told the prevalence of symptoms in the six children without obstructive sleep apnoea or in the reference population.

The management of obstructive sleep disturbance in Down's syndrome is uncertain. In the study by Southall and others tonsillectomy and adenoidectomy were effective in only one child and marginally beneficial in two. Choanal dilatation (for choanal stenosis) and tracheostomy (after failure to respond to tonsillectomy and adenoidectomy) were effective in two others. Other possible treatments which have been successful in obstructive sleep apnoea include treatment with protryptiline or aminophylline, continuous positive airway pressure at night, and reconstructive surgery of the oropharynx.

There are three important aspects to the paper by Southall and colleagues.⁶ Firstly, it helps to raise general awareness of the importance of obstructive sleep disruption. Secondly, it shows that diagnostic monitoring need not be complex: overnight oxygen monitoring, preferably in the child's own home, may be adequate for most children with suspected obstructive sleep disruption. Thirdly, it shows the recent more positive attitude towards children with Down's syndrome. No longer should we accept developmental delay or pulmonary hypertension as inevitable consequences of Down's syndrome; both may be secondary to obstructive sleep apnoea, and treatment can improve the quality of life for children with Down's syndrome.

M SILVERMAN

Reader in Paediatric Respiratory Medicine,
Royal Postgraduate Medical School,
Hammersmith Hospital, London W12 0HS

- 1 Clark RW, Schmidt HS, Schuller DE. Sleep-induced ventilatory dysfunction in Down's Syndrome. *Arch Intern Med* 1980;140:45-50.
- 2 Loughlin CM, Wynne JE, Victoria BE. Sleep apnoea as a possible cause of pulmonary hypotension in Down's Syndrome. *J Pediatr* 1981;98:435-7.
- 3 Rowland TW, Nordstrom LG, Bean MS, Burkhardt H. Chronic upper airway obstruction and pulmonary hypertension in Down's Syndrome. *Am J Dis Child* 1981;135:1050-2.
- 4 Levine OR, Simper M. Alveolar hypoventilation and cor pulmonale associated with chronic airway obstruction in infants with Down's Syndrome. *Clin Pediatr (Phila)* 1982;21:25-9.
- 5 Halliday-Smith KA. The heart. In: Lawe D, Stratford B, eds. *Current approaches to Down's syndrome*. Sidcup, Kent: Holt, Rinehart and Winston. 1965; p 62.
- 6 Southall DP, Stebbens VA, Mirza R, Lang MH, Croft CB, Shinebourne EA. Upper airway obstruction with hypoxaemia and sleep disruption in Down's Syndrome. *Dev Med Child Neurol* 1987;29:734-42.

Towards bloodless liver surgery

After the detailed description of the segmental anatomy of the liver by French surgeons in the 1950s hepatobiliary surgery developed rapidly.¹ Twenty years ago operations on the liver were uncommon and regarded as dangerous, but now they are commonplace. In experienced hands the mortality after even the most major resections has fallen below 5%. These advances have been helped by applying a wide range of technologies to diagnosing and assessing hepatic conditions, and a recent exciting development has been the ultrasonic dissector.²

Preoperative ultrasonography can show focal lesions in the liver as small as 1 cm in diameter. It shows their relation to adjacent vascular structures and provides a means of guiding biopsy needles. Intraoperative ultrasonography has provided the surgeon with an even more accurate technique of hepatic imaging.³ The relation of a tumour, for example, to both portal and hepatic venous channels can be clearly visualised; using this technique the surgeon may achieve segmental and subsegmental resection with satisfactory margins of normal hepatic parenchyma. And placing the ultrasonic probe on the liver surface is particularly useful in identifying metastases and detecting small hepatocellular carcinomas in patients with cirrhosis.⁴

Selective angiography of the liver shows the anatomical arrangement of the arterial supply (which is variable), and the arterial pattern of some lesions—for example, haemangiomas—is diagnostic. Studies of the venous phase outline the portal system and render splenoportography unnecessary in most patients. Therapeutic embolisation of the hepatic artery to control bleeding may be life saving in some patients with, for example, liver trauma. Complete assessment of liver lesions usually requires computed tomography as well as radionuclide scanning. The biliary tree is now readily assessed by retrograde and percutaneous cholangiography, and bile duct strictures and tumours can sometimes be dilated by balloon catheters and permanent stents placed to relieve the obstructed bile flow.

The ultrasonic surgical dissector (CUSA, Cavitron Surgical Systems, Sigmacon, Middlesex) now allows accurate liver resection with reduced blood loss.² It was developed initially for neurosurgical procedures from the phacoemulsifier aspirator used for cataract operations. The instrument consists of a vibrating suction device which oscillates with a frequency of 23 kHz. It fragments tissue in a radius of 1-2 mm, preferentially destroying parenchymal cells. The collagen and elastic tissue in vessels is preserved, and fragmented tissue is removed by coaxial irrigation, which allows clean dissection of the blood vessels before

accurate ligation. In experienced hands a major inter-segmental liver resection is now possible with a mean blood loss of only 500 ml,² but ultrasonic dissection does not replace scrupulous technique—a detailed knowledge of hepatic anatomy and vascular control is still essential to the surgeon.

There is an increasing demand for hepatic resection as in selected patients excision of hepatic metastases leads to a five year survival of up to 25%.⁵ The advantage of the ultrasonic dissector in these operations has already been widely recognised, and during 1987 it was used for 10% of the 7000 liver resections performed in the United States (J G Brook, personal communication).

Hepatobiliary surgery is now a recognised specialty within general surgery in Europe, Japan, and the United States. Those who heard Professor Henri Bismuth speak to the Association of Surgeons in 1987 realise that the running is not being made in England. The specialty requires an experienced team of radiologists, endoscopists, pathologists, and surgeons, and financial support is required to provide the technology for Britain to keep abreast of a rapidly developing subject.

J L DAWSON
Consultant Surgeon

E R HOWARD
Consultant Surgeon

King's College Hospital,
London SE5 9RS

- 1 Bismuth H. Surgical anatomy and anatomical surgery of the liver. *World J Surg* 1982;6:3-9.
- 2 Hodgson WJB, Delguercio LRM. Preliminary experience in liver surgery using the ultrasonic scalpel. *Surgery* 1984;95:230-4.
- 3 Bismuth H, Castaing D, Garden OJ. Operative ultrasound in surgery of primary liver tumours. *World J Surg* 1987;11:610-4.
- 4 Sheu JC, Lee CS, Sung JL, Chen DS, Yang PM, Len TY. Intraoperative hepatic ultrasonography: an indispensable procedure in resection of small hepatocellular carcinoma. *Surgery* 1985;97:97-103.
- 5 Hughes KS, Simon R, Songhorabodi S, et al. Resection of the liver for colorectal carcinoma metastases: a multi-institutional study of patterns of recurrence. *Surgery* 1986;100:278-83.

Why 1992 may be disastrous for health

In 1992 fiscal frontier controls throughout the European Community will be harmonised with potentially far reaching changes in the scope and size of indirect taxes such as value added tax and excise duties on cigarettes and alcohol. The Institute for Fiscal Studies has predicted that as a result the consumption of alcohol may increase by one third in Britain.¹ Cigarette consumption, falling for over 15 years in Britain,² may rise by 4% and because value added tax will be levied on food the institute predicts that there may be a 3% fall in the amount of food bought. If a domestic government proposed such radical changes in indirect taxation, which includes putting value added tax on medicines, heating fuel, children's clothes, and newspapers, it would almost certainly not be re-elected. So why does the European Commission believe they are necessary, and what are the ramifications for wider issues than just free trade within the community?

Free trade has always been the central ethos of the Common Market, and free trade means that member govern-

ments' indirect taxes should not lead to unfair competition among firms in different community countries. Protectionism is out. The harmonisation of indirect taxes will, as the Institute for Fiscal Studies points out, have repercussions on the daily lives of everyone in Britain—and not necessarily for the better.

The proposals on tobacco duty would mean a cut in tax of 38% to 241% for each packet of cigarettes, a cut in the retail price of about 10%. This cut, the institute predicts, would lead to a 4% rise in consumption. In its 1986 booklet³ the Health Education Council (now authority) estimated that every year some 77 000 people in Britain die of smoking related diseases and that morbidity from smoking costs the NHS about £1.1 billion annually. The effects of a 4% rise in tobacco consumption on these figures is difficult to predict (especially in the short term) but they would be substantial.

The effect on alcohol consumption would be greater. The commission propose a cut of nearly half in the duty of spirits, a tenfold cut for wine, and a fourfold cut for beer. The net effect would be a 39% rise in alcohol consumption. This dramatic rise is certain to increase the number of alcohol related deaths (estimated to be between 10 000⁴ and 40 000⁵ a year) and the economic costs of alcohol misuse (about £1 billion a year at 1983 prices⁶).

The commission's proposals will inhibit domestic governments who wish to use indirect taxes as part of a general health policy—for example, to increase the cost of cigarettes or alcohol in order to reduce consumption: the proposals specify not only lower limits to taxation but also upper limits, which are below Britain's current rates. It is not only the changes in the size of indirect taxes which will influence health and health care but also the changes in the scope of value added tax. The Institute for Fiscal Studies calculates that if the additional tax revenues raised by the wider scope of value added tax were channelled back to households through cuts in income tax, for instance, then households earning under £60 a week would lose £1 and those earning over £450 would gain nearly £3. This widening of financial inequality may well, as the Black report noted,⁷ work its way through to increased health inequalities.

As yet these tax changes are still only proposals subject to ratification by community governments. The Institute for Fiscal Studies reckons that they are not necessary to attain the goal of open markets in the European Community. In deciding what to do all member states, and particularly Britain with its generally tougher taxes on alcohol and tobacco, should weigh up the benefits of free trade against the costs in terms of poorer health, wider disparities in income, and consequent increases in health care costs.

JOHN APPLEBY

Economics Correspondent,
British Medical Journal

- 1 Lee C, Pearson M, Smith S. *Fiscal harmonization: an analysis of the European Commission's proposals*. London: Institute for Fiscal Studies, 1988.
- 2 Central Statistical Office. *Social trends 18*. London: HMSO, 1988.
- 3 Health Education Council. *The big kill: smoking epidemic in England and Wales*. London: HEC, 1986.
- 4 Taylor D. *Alcohol: reducing the harm*. London: Office of Health Economics, 1981.
- 5 Royal College of General Practitioners. *Alcohol: a balanced view*. London: RCGP, 1986.
- 6 Maynard A, Hardman G, Whelan A. *Measuring the social costs of addictive substances*. *Br J Addict* 1987;82:701-6.
- 7 Black D, Morris JN, Smith C, Townsend P. *Inequalities in health; the Black report*. Suffolk: Chaucer Press, 1982.