about investigation (this applies particularly to invasive procedures). Often the next-of-kin will have insights as to what the patient's views were when still competent. In Scotland this process of consultation was enshrined in law in 2000 with the Adults with Incapacity Act.

B J ADLER
Senior House Officer

DAVID J STOTT
Professor of Geriatric Medicine

Academic Section of Geriatric Medicine
Glasgow Royal Infirmary

Editor – Melanie Davies' review of the prevention of diabetes (*Clin Med* September/October 2003, pp 470–4) is comprehensive but lacking in one important aspect, specifically the influence of sleep disruption on metabolism. This has been the subject of peer-reviewed research from two perspectives:

1) The association of impaired glucose tolerance (IGT) with obstructive sleep apnoea (OSA). Ip *et al*[1] reported IGT directly proportional to the severity of OSA, and which is reversed by treatment of the apnoea by nasal positive airway pressure.[2] At the same time, Punjabi *et al*[3] reported in mildly obese individuals insulin resistance again proportional to sleep disordered breathing.
2) The impact of sleep debt on glucose metabolism. Van Cauter[4] has reported the development of IGT in previously healthy subjects submitted to seven days of sleep restriction (of four hours per day). Assessment of heart rate variability in this study suggested an increase in sympathetic tone, and this as the mechanism for IGT. A similar mechanism is proposed in OSA where urinary excretion of catecholamines is increased, which can be reversed by treatment of the OSA with nasal CPAP.

Sleep restriction, albeit not to the extent of Van Gauter's study, is ubiquitous in our modern society. Similarly, sleep apnoea is very common with 24% of men aged 30–60 having more than five apnoeas per hour of sleep, and with hypertension now accepted as a direct adrenergic consequence of OSA.[5]

Clearly, inactivity and diet are critical to the development of obesity but if IGT can result from insufficient or interrupted sleep, and IGT promotes increase in weight which in turn worsens sleep apnoea and IGT, it has not escaped this sleep physician's notice that the epidemic of diabetes and of obesity may have a common denominator.

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ADRIAN WILLIAMS
Consultant Physician and Director
Lane-Fox Respiratory Unit and Sleep Disorders Centre
St Thomas' Hospital

Clinical & Scientific letters

Letters not directly related to articles published in *Clinical Medicine* and presenting unpublished original data should be submitted for publication in this section. Clinical and scientific letters should not exceed 500 words and may include one table and up to five references.

Is prolonged use of computer games a risk factor for deep venous thrombosis in children?

Case Study

Deep venous thrombosis (DVT) rarely occurs in children.[1–2] Its occurrence usually suggests an inherited or acquired hypercoagulable state. Mechanical obstruction and prolonged immobility such as during air travel have been shown to predispose to DVT in adults,[3] but never before in children.

We report the first instance of primary DVT in an otherwise healthy 12-year-old boy after prolonged immobility while using his video games console. He presented to the paediatric unit with unilateral swelling of the left calf, which was non-tender. The onset of his symptoms was preceded by prolonged immobilization while using his games console the day before. He had spent up to four consecutive hours that day playing on the console without an intermission. Furthermore, he had both legs flexed, with the calves beneath his buttocks, throughout this four-hour period. There was no family history of thrombophilia. When he was examined by the paediatric SHO and registrar, the diagnoses of DVT, fracture or infection were excluded clinically. A full blood count, C-reactive protein and coagulation screen were normal and he was sent home. Six days later, he returned with increase in left lower limb swelling and pain. On examination, there was venous congestion and severe swelling and tenderness of the left calf. Ultrasound scan showed thrombus in the left popliteal vein

extending proximally into the distal superficial femoral vein (Fig 1). The maximal length was about 6cm.

Anticoagulation thrombolytic therapy was instituted. Testing for factor V Leiden and prothrombin G20210A mutations, homocysteine, anticardiolipin antibodies, lupus anticoagulant, and functional assays for protein S, protein C, and antithrombin III was performed. All results were normal.

Discussion

To our knowledge, there are no published reports of spontaneous DVT in well children secondary to prolonged immobilisation. The incidence of venous thromboembolism in childhood has been reported to be as low as 0.07/10,000.[4] Most episodes occur in association with known risk factors such as malignancy, surgery or thrombophilic states.[2,4] The differential diagnosis of an acutely swollen limb is long. In this example, the initial diagnosis of DVT was missed in this child because of its rarity as well as the lack of recognised risk factors. Prolonged use of computer games resulting in immobilisation must be considered a risk factor for DVT in a child presenting with acute swollen lower limb.

Today, many children spend long periods playing domestic computer games. In our case, the long period of immobilisation in an unusual posture probably contributed to the occurrence of DVT. Given the large numbers of children who might be at similar risk, there may be a case for statutory health warnings to advise users and parents that general measures should be taken to reduce the risk of DVT, such as leg exercises and intermission during long periods of play.

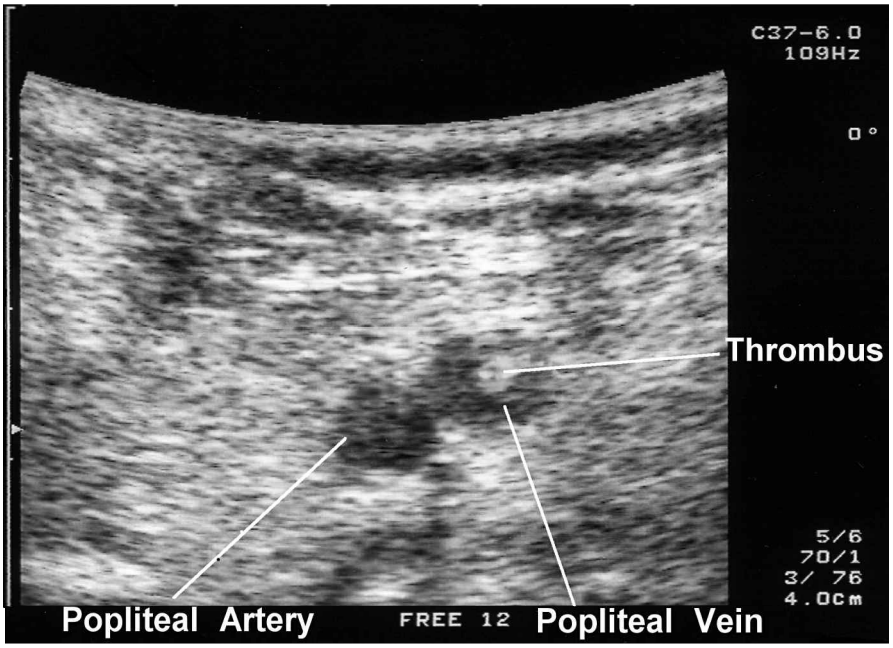

Fig 1. Ultrasound of left popliteal veins.

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SM NG
Specialist Registrar in Paediatrics

RM KHURANA
Senior House Officer in Paediatrics

HW AW YEANG
Specialist Registrar in Radiology

UM HUGHES
Consultant Radiologist

DJ MANNING
Consultant Paediatrician

Arrowe Park Hospital
Upton