

antibody causing ANT is not anti-P1<sup>A1</sup>. Platelet concentrates should be gamma-irradiated to prevent transfusion-induced graft-versus-host disease in the fetus.

Non-invasive methods for prenatal treatment of ANT have lately been attempted and preliminary results of a study by Bussel et al<sup>21</sup> are encouraging. These workers treated seven high-risk cases of ANT with weekly maternal administration of high-dose intravenous IgG (1 g/kg infused over 4–7 hours once a week), with or without dexamethasone (3–5 mg/day), for a period of 6–17 weeks until delivery. In all cases fetal platelet counts (monitored by fetal blood sampling) were increased and there were no bleeding complications; by contrast, platelet counts were lower at birth in all seven of their respective untreated siblings, three of whom had had ICH (antenatal in two). In two other single case-reports of ANT,<sup>15,17</sup> high-dose IgG had no effect on the fetal platelet count, although only a single course of treatment was given; in a third case<sup>22</sup> the approach was similar to that used by Bussel et al,<sup>21</sup> with no apparent improvement in the platelet count at birth.

Thus the best prenatal management of ANT to prevent ICH has not been established, despite the availability of fetal blood sampling. Moreover, for logistic reasons it may not be possible to offer weekly intrauterine platelet transfusions from as early as the 26th week of gestation to all affected pregnancies; the promising early results of treatment with high-dose intravenous IgG (with or without steroids) once ANT has been diagnosed should therefore be confirmed.

These potential improvements in prenatal management of ANT draw attention to the plight of the first baby at risk, in whom the diagnosis is unexpected and made after birth. A severely affected baby may already have had ICH in utero or during delivery, and even if not, remains at risk depending on the severity of thrombocytopenia. Early diagnosis is therefore essential, and a transfusion of compatible donor or maternal platelets should be given as soon as possible;<sup>7</sup> high-dose intravenous IgG may also help, but the effect is not as rapid.<sup>7</sup> The disadvantaged first baby also raises the question of routine antenatal screening for the most common form of ANT—fetomaternal incompatibility for the P1<sup>A1</sup> antigen. A preliminary economic evaluation in Canada<sup>23</sup> concluded that ANT screening might be able to compete with other health screening programmes for funding. Before such programmes are initiated, it will be important to determine the frequency of ICH in utero and the efficacy of prenatal management in preventing this complication.

## THE DANGERS OF NOT GOING TO BED

Teach us to live that we may dread  
So few hours spent in bed.  
Let us sleep and we may save  
Our patients from an early grave.  
—after R. A. J. ASHER<sup>1</sup>

SLEEP—a third of our lives are spent in it; its biological purpose is obscure; its drive is compelling; and its deprivation and disruption are powerful weapons in the armamentarium of torturers and brain washers. Only one profession apparently can do without it—doctors. In 1987, junior medical staff in a Scottish teaching hospital averaged 1.5 hours' sleep a night when admitting emergency cases,<sup>2</sup> in a typical working week of 98 hours.<sup>3</sup> Conditions are unchanged from UK studies of 1973<sup>4</sup> and 1974<sup>5</sup>, and from American studies of 1970<sup>6</sup> and 1987,<sup>7</sup> when newly qualified doctors on duty averaged 1.8 and 3.0 hours' sleep a night, respectively.

The purpose of sleep is not obvious,<sup>8</sup> although it is important physiologically,<sup>9</sup> in recovery from illness,<sup>10</sup> and in memory consolidation.<sup>11</sup> Whilst sleep deprivation disrupts performance,<sup>12</sup> it also interacts with other stressors:<sup>13</sup> feedback, knowledge of results,<sup>13</sup> and financial incentives diminish its effects.<sup>14</sup> Effects are greatest upon vigilance tasks in which infrequent stimuli are detected in a monotonous, uniform environment. There are strict legal controls about sleep for pilots and lorry drivers<sup>15</sup>—professions, like medicine, which are “unforgiving of minor slips”.<sup>16</sup> In another unforgiving environment, soldiers on exercise are impaired by a single night without sleep.<sup>17</sup> Junior doctors complain vociferously about sleep deprivation,<sup>18</sup> and believe it impairs clinical judgment. An American court has ruled that the long working hours of a hospital resident contributed to the death of Libby Zion;<sup>19</sup> a British judge has linked long working hours and medical malpractice claims<sup>19</sup>; *The Times* has thundered in an editorial;<sup>20</sup> and a Bill limiting doctors' working hours is to be presented by Lord Rea in the House of Lords next week.

Deaconson et al,<sup>7</sup> using five psychometric tests in 26 surgical residents, lately compared the results after nights on

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20. Doctors on their feet. *The Times* Dec 9, 1988: 15.

duty and after control nights. These researchers showed no effect of sleep deprivation on performance, and were even moved to a vigorous defence of traditional working practices, attacking "arbitrary recommendations to limit working hours of residents", and stating that "criticism of traditional hospital on-call schedules should be based on objective data". Sleep deprivation, in their view, does not "adversely affect the capacity of residents to exhibit the cognitive and motor functions needed to provide appropriate patient care".

However, such robust conclusions are not well supported. The vigilance task, originally designed for concussed patients,<sup>21</sup> lasted only five minutes. Control, non-sleep-deprived doctors were tested at 0600 h after 6-7.5 hours of sleep which was also recovery from a previous night on-call with 3 hours of sleep; on a 10-point scale ("1 indicates fully rested . . . 5 indicated that the resident felt physically tired but retained the ability to focus attention with some effort") controls rated their sleepiness as 4. Performance may also have been enhanced by incentives of \$50 in cash and a reward worth \$200 for the best performance; "negative incentives" were established by publicising scores to colleagues. Finally, although not statistically significant, for five psychometric tasks in three subject groups, mean scores were worse after sleep-deprivation in 14 of 15 cases. Cognitive tasks (of reasoning, memory, reaction times, and motor skills) were used in nine other studies of junior doctors; eight showed significant impairment after sleep deprivation<sup>2,5,22-27</sup> and only one<sup>28</sup> did not. In five studies with simulated medical tasks (eg, sorting laboratory results, detecting electrocardiographic arrhythmias, monitoring anaesthetic equipment), two<sup>6,29</sup> found significant impairment after sleep deprivation, two<sup>25</sup> found non-significant impairments, and one<sup>26</sup> found no impairment. No studies have examined real medical decision-making. Overall, the evidence suggests that sleep deprivation impairs doctors' cognitive processing, although in more realistic situations motivation can compensate for decreased ability with increased effort and arousal.

Appropriate medical care is more than accurate diagnosis. Good communication, an essential part of caring, depends on the mood of doctors. Sleep-deprived doctors report dysphoric mood changes, including increased anger, hostility, and sadness and decreased elation, social affection, and vigour,<sup>2,6,22,27,30</sup> and may therefore communicate less well. Mood changes reflect a wider stress syndrome in junior hospital doctors, attributed to sleep deprivation,<sup>31</sup> pervading professional and personal life,<sup>32</sup> and perhaps responsible for excess depression in hospital residents.<sup>33</sup>

In 1947, Richard Asher<sup>1</sup> castigated established wisdom concerning excessive bed rest for patients in hospital; if writing now he might well have questioned another standard hospital practice.

## PLASTIC OR PARAFFIN?

THE workload of the histopathologist today bears little resemblance to that of his counterpart, the morbid anatomist, of some 25 years ago. Although renal and liver biopsies had been around for ten years or more, they were only done with any frequency in specialist units; the average pathologist largely reported on specimens from patients on whom a definitive operative procedure had already been carried out. The widespread introduction of fiberoptic endoscopy with its resulting plethora of endoscopic biopsies necessitated great changes; specimens obtained in this way are small and often crushed and distorted, leading to difficulties in interpretation. Not only has the histopathological workload increased, but also the introduction of new treatment regimens for tumours and other conditions requires much more precision and accuracy in diagnosis. Fortunately, histopathology has not stood still—eg, numerous monoclonal antibodies are now used to characterise tumours and other conditions such as glomerulonephritis. Since many of these antibodies may be used on formalin-fixed, paraffin-embedded material, these techniques are readily applicable to any routine laboratory.

Despite these new aids, endoscopic biopsy specimens are often difficult to interpret and so any new development that helps to produce a more precise diagnosis is welcome. Ferrell and Beckstead have lately advocated the use of plastic embedding for endoscopic biopsy material.<sup>1</sup> These workers claim that a more specific diagnosis can be made in over a quarter of cases by means of this technique. However, the 75 cases analysed were not sequential biopsies from a gastrointestinal endoscopy unit but cases selected by clinicians either because of their complexity or because malignant lymphoma was suspected. It is doubtful that such increased specificity would be seen in a more representative unselected sample.

Resin embedding has been used for several years for renal and lymph node biopsy specimens because it gives better definition on light microscopy; Ferrel and Beckstead found it very helpful in defining the morphology of malignant cells and of small parasites such as cryptosporidia. The improved preservation of many antigens with plastic embedding helps to distinguish undifferentiated carcinoma from malignant lymphoma and to type malignant lymphomas more accurately. However, the technique has several important drawbacks. Whilst some clinicians may identify problem cases and lymphomas before placing the biopsy specimen into fixative, most would not and so all specimens would need to be processed in this way to benefit from the technique. In addition, sections are not available for histological examination until 44 hours (ie, two working days) after endoscopy; with conventional processing

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