Synchronising breathing and positive pressure ventilation

Sir,

The paper by Field et al.1 shows what we have observed during artificial ventilatory support: shorter inspiratory times and faster respiratory rates result in more synchronised breathing, decreasing the need for sedation or paralysis.

Greenugh et al.2 incriminated asynchronous breathing in the genesis of pneumothorax and referred to ‘active expiration against the ventilator’ as being the main factor. We would suggest that ‘deep inspiration with the ventilator’ is more likely to be the problem. It is at this time in the ventilator cycle that the additive effect of ventilator pressure and negative pleural pressure results in a large transpulmonary pressure and maximal alveolar distension. Active expiration against the ventilator results in a smaller transpulmonary pressure and less alveolar distension: an unlikely time for alveolar rupture. Both of these effects can be seen in Fig. 1 of Field’s paper.

In addition to its disruptive effect on ventilation and its relation to pneumothoraces, breathing out of synchrony also results in the type of fluctuations in the cerebral and systemic circulations that have been associated with an increased risk of intraventricular haemorrhage by Perlman et al.3

Synchronised breathing achieved by higher rates and shorter inspiratory times would also have the advantage over paralysis of better distribution of ventilation through the continued action of the diaphragm.

References

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Immunoregulatory treatment for minimal change nephrotic syndrome

Sir,

It is likely that the mechanism of action of levamisole in the treatment of minimal change nephrotic syndrome as reported by Mehta1 and Tanphaichitr2 is specific suppression of excessive suppressor T cell function.

All drugs used in the treatment of minimal change nephrotic syndrome, including glucocorticoids, cyclophosphamide, nitrogen mustard, and azathioprine, have profound immunosuppressive actions except levamisole, which as shown in the Mehta study and in others is an immunostimulant. There are two paradoxes that need explanation:

(a) The treatment of a disease in which immunosuppression is an intrinsic part with drugs that suppress the immune system further.

(b) The successful treatment of minimal change disease with several immunosuppressive drugs and one immunostimulant drug.

The answers to these paradoxes can be found by more detailed study of the cellular actions of levmisole. Levamisole achieves its immunostimulant effects by specifically suppressing suppressor T lymphocytes.3 4 The other drugs suppress T lymphocytes non-specifically along with other lymphocyte subgroups.

Excessive suppressor T lymphocyte function in untreated minimal change nephrotic syndrome might cause both the disease through release of a lymphocine, which disrupts anionic binding sites, and the observed depression of immune function. Further investigation of this interesting treatment is most certainly appropriate, both to give insight into the disease and to develop a more specific form of treatment.

References
1. Mehta KP, Ali U, Kutty M, Kolhatkur U. Immunoregulatory...
Chemoprophylaxis of meningitis

Sir,
I found the article by Dr Hillas Smith on 'Chemoprophylaxis of meningitis' both interesting and informative. I was, however, a little puzzled by the statement in paragraph three, 'A case can be made for routine chemoprophylaxis in patients before discharge from hospital when curative treatment of meningococcal or influenzal meningitis is completed'. In the previous paragraph you say, 'but it should be pointed out that penicillin, which is so effective in treatment of cases, does not prevent carriage or indeed the development of invasive disease when it is used prophylactically'.

Are you suggesting that even after aggressive intravenous treatment with big doses of penicillin or ampicillin, the patient remains a carrier and needs chemoprophylaxis on discharge from hospital? If this is so, we might all have to change our present policy regarding the duration of barrier nursing of meningitis.

Dr Hillas Smith comments:
Dr Rajan is quite correct in suggesting that even after appropriate curative treatment some patients may still harbour the infective organism in the nasopharynx. Because of this, the idea has grown up that treated patients may well require eradication with a drug such as rifampicin. An alternative course would be for routine cultures to be taken at the end of treatment and to await positive results before embarking on rifampicin chemoprophylaxis.

Medical evidence in child abuse

Sir,
I read with interest the article by Drs Taitz and King. The outcome of child abuse certainly depends on the input. Paediatrics has probably failed to define at least one of the input characteristics of abuse cases sharply enough.

The paediatrician gains increasing experience of the medical aspects of the many forms of child abuse during training. Training makes little attempt, however, to provide insight into the legal aspects of abuse proceedings. Though the junior doctor may on his own initiative try to gain some knowledge of law, all too often he is left to discover the rules of the legal game the hard way by sustaining one or more ‘batterings’ at the hands of our legal contemporaries in court. Lack of experience in procedure may not only be embarrassing to the individual concerned but may also fail to serve the interests of the child by slowing (or even halting) the court process and by making the paediatrician appear more ignorant than he really is. More senior expert witnesses will have developed legal nous over the years. Sometimes, junior staff have to appear in abuse cases, ranging from the trivial to manslaughter. They are unlikely to have much or indeed any legal experience. Some attempt to remedy this could be made by liaison with the legal profession to include some preparation for such cases in training. This would help to prevent some of the legal stumbling blocks that may add to the already difficult and unpleasant business of abuse cases.

Vancomycin and necrotising enterocolitis

Sir,
During recent months we have been trying to prevent necrotising enterocolitis in intensive care babies by giving a two day course of oral vancomycin before introducing oral feeds. We have also used oral vancomycin in addition to metronidazole and other systemic antibiotics in the treatment of necrotising enterocolitis. We are not as yet in a position to say whether this has been a helpful treatment, but we have been concerned to establish that it is not a harmful one in terms of aminoglycoside toxicity. There is evidence for absorption of orally administered vancomycin in adults with enterocolitis, and we felt that the