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## Dexamethasone in bronchopulmonary dysplasia

Sir,

Dexamethasone is useful for the treatment of bronchopulmonary dysplasia in premature infants and it is likely that its use will increase. Several side effects have been reported, including an increased incidence of infection. Because glucocorticoids are known to produce neutrophilia in adults (probably through a combination of increased release of neutrophils from the marrow, and prolongation of their circulating half life), and because neutrophilia is sometimes an indication of infection in the newborn, it is possible that a false suspicion of the presence of infection may be raised in babies being treated with steroids. We describe the neutrophil counts of eleven babies whom we have treated with steroids during the past year.

Each baby was treated with 0.6 mg/kg/day of dexamethasone for one week. The table shows the neutrophil counts before and during the period of treatment with steroids. In four babies a pronounced neutrophilia ( $>20 \times 10^9/l$ ) developed during treatment. In three of these the blood film was reported as shifted to the left with a band neutrophil:neutrophil ratio greater than 0.25:1. In two babies a left shift with an increase in band neutrophil:neutrophil ratio occurred in the absence of neutrophilia. None of these babies showed other signs of infection, no pathogens were grown on serial blood

Table Neutrophil counts in 11 babies treated with steroids

Case No	Gestation (weeks)	Age (weeks)	Maximum neutrophil count during seven days before treatment with steroids started ( $\times 10^9/l$ )	Maximum neutrophil count during treatment with steroids ( $\times 10^9/l$ )
1	25	4	6.1	6.3
2	31	3	16.2	10.3
3	30	4	5.2	6.5
4	25	20	10.8	10.6
5	28	3	8.4	6.7
6	25	3	9.4	26.0
7	30	10	11.6	25.0
*8	30	17	7.7	25.0
*9	30	2	12.6†	30.0
10	24	4	12.7†	9.6‡
11	29	4	6.0	18.0

\*One baby received two courses of steroids; †total white cell count; ‡baby developed septicaemia.

cultures, and C reactive protein estimations yielded negative results.

We recognise that neutrophilia alone is not a sensitive indicator of infection however pronounced it is, and an increase in the proportion of immature neutrophils is bound to raise the suspicion of infection. We report our experience to make the point that this may occur as a result of the treatment of premature babies with steroids as it does in adults.

### References

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## Giving drugs per rectum for systemic effect

Sir,

I read the annotation by Dr Choonara with interest.<sup>1</sup> To prevent paraldehyde given rectally, however, from being prematurely considered as part of the history of anti-convulsant treatment I should like to make the following points.

In Canada and the United States of America it remains current practice to give paraldehyde rectally in the treatment of status epilepticus,<sup>2,3</sup> and 83% of the dose given this way is absorbed.<sup>4</sup> Absorption after intramuscular administration depends on blood flow within the muscle; in a child having convulsions this may be reduced and absorption therefore delayed.

A 50% solution of paraldehyde given rectally infrequently produces intestinal irritation and rarely causes perforation of the large intestine. An intramuscular injection results in extreme pain at the site of the injection and sterile abscesses, fat necrosis, sloughing of the skin, and muscle irritation have occurred even when the drug is injected deep within the muscle. Severe and permanent nerve damage has occurred when the drug has been injected too close to nerve trunks.<sup>4</sup> The frequency and severity of these complications militate against the use of paraldehyde intramuscularly. Finally, paraldehyde produces less respiratory depression than do the benzodiazepines.

In an emergency department in which intravenous access is not readily available, an emulsion or solution of diazepam given rectally may well be the preferred treatment of status epilepticus. Paraldehyde given rectally offers a safe and effective alternative. There is also

evidence to suggest that paraldehyde can control seizures when other anticonvulsants have failed.<sup>2</sup>

#### References

- 1 Choonara IA. Giving drugs per rectum for systemic effect. *Arch Dis Child* 1987;**62**:771-2.
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- 3 Wise PH, O'Rourke PP. Acute care. In: Graef JW, Cone TW, eds. *Manual of paediatric therapeutics*. 3rd ed. Boston: Little, Brown and Company, 1985:59-60.
- 4 Canadian Pharmaceutical Association. *Compendium of pharmaceuticals and specialties* 1987. Toronto: Southam Murray, 1987:569-70.

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Sir,

We read Dr Choonara's annotation with interest.<sup>1</sup> Despite a thorough search we have been unable to find any reports of hard data on the acceptability of the rectal route for giving drugs to children, although much has been written on the subject. In 1986 therefore we asked the mothers of 193 children (mean age 51.7 months) who were attending the general and surgical paediatric clinics at the University Hospital of Wales or Caerphilly District Miners' Hospital for their views on temperature-taking and medication per rectum. Only five of 55 mothers who regularly recorded their children's temperatures used the rectal route. On the other hand, 15% of the mothers had already given drugs rectally, and altogether 76% professed willingness to use the rectal route should this, for example, obviate a convulsion.

We believe that if they were given proper explanations of the benefits and a clear demonstration of how to do it, most mothers would comply as well with giving drugs rectally as with giving them orally.

#### Reference

- 1 Choonara IA. Giving drugs per rectum for systemic effect. *Arch Dis Child* 1987;**62**:771-2.

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## The disability of short stature

Sir,

The degree of psychosocial adjustment that has to be made in adult life by patients with growth hormone deficiency has been poorly studied. In a recent paper,<sup>1</sup> we reported our experience in the study of the marital, social, and vocational state of 75 such adults (mean age 28 years; 59 men, 16 women) who had been admitted to our clinics

between 1963 and 1980. They had all received long term growth hormone replacement, and 56 patients had presented with multiple pituitary defects that were corrected as appropriate. The final mean (SD) height of the men was 153.5 (3.0) cm and of the women 147.0 (4.0) cm.

Among employable patients (over the age of 21) we found a high (43%) percentage were unemployed or in part time work. The rate of employment was significantly lower than that of their parents or siblings, and of the general population. The distribution of the employed subjects in occupational categories was similar to that of the general population.

Among patients over the age of 21, only 2% were married, and 84% lived with their parents or relatives, confirming the supposition of prolonged economical dependency on the family. Subjects who were working also lived with their families, further illustrating the social isolation of these patients. Similar findings have been reported by Dean *et al* in Canadian adults with growth hormone deficiency.<sup>2</sup>

A small percentage of the entire group were living in voluntary communities. This tendency to avoid or limit social integration was also confirmed by their preference for single sporting activities that avoid team work.

Surprisingly, scholastic achievement was similar to those of their parents, or siblings, and to that of the general population. In our sample, 5% were university students or had already completed their university studies, compared with 4% of those reported by Dean *et al*<sup>2</sup> and 32% reported by Galatzer *et al*.<sup>3</sup> No difference in the social outcome was observed between men and women or between patients with isolated growth hormone deficiency and those with multiple hypophysiotropic defects.

In conclusion, our results emphasise still further the need to develop and ameliorate the psychosocial support in the routine long term treatment of hypopituitarism. This aspect must be carefully considered in view of the future unlimited supply of biosynthetic growth hormone products.

#### References

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