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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 ($>20\times10^9$/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 cultures, and C reactive protein estimations yielded negative results.

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 ($\times10^9$/l)*	*Maximum neutrophil count during treatment with steroids ($\times10^9$/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.

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.

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Giving drugs per rectum for systemic effect

Sir,

I read the annotation by Dr Choonara with interest.[1] To prevent paraldehyde given rectally, however, from being prematurely considered as part of the history of anticonvulsant 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,[2 3] and 83% of the dose given this way is absorbed.[4] 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.[4] 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