Gut blood flow velocities in the newborn: effects of patent ductus arteriosus and parenteral indomethacin

SIR,—Skinner et al.1 seem to suggest that the rapid fall in blood flow velocity seen in the cerebral,2 renal,1 and mesenteric,1 arteries after an intravenous bolus of indomethacin is due to rapid closure of the ductus arteriosus and a simultaneous fall in cardiac output. Is their explanation for the recovery of regional blood flow velocities after the acute fall a gradual reopening of the ductus with increasing output?

There are several reasons why we believe the rapid fall in mesenteric blood flow velocity reflects regional vasodilatation rather than a fall in cardiac output. Our data indicate clearly that the coeliac axis and superior mesenteric artery do not behave in the same way, a reflection of the very different vascular beds which they supply. The fall in peak systolic velocity in the coeliac axis was significantly less than in the superior mesenteric artery (p<0.034). Moreover, our child with Fallot's tetralogy, who did not have retrograde diastolic flow and was inadvertently treated with indomethacin, showed no change in clinical state, yet showed the expected fall in coeliac and superior mesenteric artery blood flow velocities.

Bolus indomethacin results in a rapid increase in systolic blood pressure which parallels the changes in regional blood flow velocity representing, we believe, considerable peripheral vasoconstriction.3 5 This is hard to equate with the suggestion of Skinner et al. of a rapid fall in cardiac output, especially when data from Saliba et al. demonstrate very clearly that ligation, as opposed to the treatment of the ductus with indomethacin, does not affect systolic blood pressure, but does produce a rapid increase in diastolic blood pressure and immediate return of forward diastolic flow velocities.5

There is no doubt that indomethacin does affect the ductus and that left ventricular output decreases with ductal closure. The question, however, is how to interpret the observed changes in regional blood flow velocity. We would suggest that ductal closure is represented by the return of forward end diastolic flow velocities which appears to be a good predictor of eventual ductal closure and that the rapid fall in velocity represents a local vasoconstriction which can be avoided by the slow administration of indomethacin which is equally effective at closing the ductus.

Changes in body composition and energy expenditure after six weeks' growth hormone treatment

SIR,—It was gratifying to read the well controlled study by Dr Gregory and colleagues, documenting impressive changes in body composition and energy expenditure after only six weeks of treatment with biosynthetic growth hormone (hGH).4 Nicolaidis and Even in 1986 introduced the term 'leptogenic' (from the Greek word leptos=lean) to describe pharmacological agents that reduce body fat by the following means: (i) affecting appetite/satiety mechanism, (ii) altering metabolism, (iii) adjusting set point controls, and (iv) through other peripheral/central nervous system effects. Research by ourselves and others (Ritten from Karolinska Institute, Stockholm, Klish and colleagues from the Baylor College of Medicine, Houston, and Saenger and colleagues from Albert Einstein College of Medicine in the Bronx, New York) presented at the International Congress on Prader-Willi syndrome in the Netherlands in May, 1991, has documented that changes in body stature associated with the administration of growth hormone to children with Prader-Willi syndrome are often accompanied by reductions in percentage of body fat. In light of the observation reported by Forbes that children with Prader-Willi syndrome show strikingly less lean body mass than equally overweight children with exogenous obesity6 and the demonstration by Hill et al. and Schoeller et al. that energy expenditure is also considerably reduced in Prader-Willi syndrome, the findings by Gregory et al suggest that hGH exerts its leptogenic effects by increasing the metabolic activity of the fat free mass.

Analysing the cases reported by Gregory et al. who showed a decrease in resting energy expenditure expressed as a percentage of total fat free mass suggests that additional research might be helpful in predicting who might show a leptogenic effect to hGH treatment. Responders had normal variant short stature or isolated growth hormone deficiency. Child- ren with acute lymphoblastic leukaemia or craniofacial hypogonadism showed reduced metabolic activity.


7 Changes in body composition and energy expenditure after six weeks' growth hormone treatment

SIR,—I read with interest the study on the use of indwelling cannulas for insulin administration in diabetes mellitus.

Indwelling cannula for insulin administration in diabetes mellitus

SIR,—I read with interest the study on the use of indwelling cannulas for insulin administration7 and would like to report different experiences with the same device in diabetic subjects.

During summer camps in Austria in 1989, 49 diabetic subjects (aged 9-22 years) used the indwelling cannula (Insulfun, Vigo) in an open trial to test the acceptance and use of this device in those who inject themselves. The proposed indwelling time was 144 hours for each cannula. All the subjects were allowed to give their injections themselves, most had two daily insulin injections, and about a quarter used insulin pens for multiple injections. The first insertion of the cannula was done by a doctor, afterwards the subjects were allowed to insert themselves at any time.

Sixteen subjects used the cannula only once, 13 twice, 15 three times, four times and six times. The mean indwelling time was only 41.5 hours (range 1-120 hours), which is much shorter than in the British8 or Swedish study.7 Reasons for removal or change of the cannula were: loss during sports (21-4%), spontaneous loss (21-6%), pain at the insertion site, local inflammation (14-2%), and local allergy (10-7%). In 54 cases a bacteriological culture of the insertion point was performed and in 15 cases a 4 ml aspirated sample was cultured. Susceptibility to epidermidis was found. No obvious changes in metabolic control could be observed during the use of the indwelling cannula. After the summer camp only four subjects (8-2%) wanted to continue to use the device.

Because of the failure of the adhesive patch the indwelling time in these subjects was only 35% of the proposed time. Therefore the major advantage of the device in reducing the number of injections was lost. Whether the Austrian climate, with higher average summer temperatures and increased sweating during normal sports, contributes to the high percentage of spontaneous losses is unclear. It is interesting, however, that the studies reporting longer indwelling times for the cannulas came from northern Europe.

In conclusion, it is my opinion that an indwelling cannula (at least in the available form) is of no advantage compared with conventional injections. Relatively high costs and the possibly increased risk of local infections must also be taken into account.

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7 Changes in body composition and energy expenditure after six weeks' growth hormone treatment

Clearly, further practical for whether mine of when tried out in a summer diabetic camp portion of lymphocytes bearing T cells and CD5-, we are interested to read of Dr Schober's experience of using the overwhelming preponderance of T cells operating those operating lymphoid system and intestinal pseudo-obstruction, the authors found a normal oral colonic transit time. Therefore the genesis of patient's constipation is not due to impaired small bowel motility. Colonic motility had not yet been studied in Duchenne muscular dystrophy.

For this reason, we recently studied colonic transit time in 12 patients, aged 8 to 18 years (mean 12±3 years). Eight of them were confined to a wheelchair. Gastrointestinal symptoms were noted and segmental colonic transit time was performed according to a method previously described: 20 markers were given at breakfast time to the patients for three consecutive days and plain film of the abdomen was taken at the fourth and seventh days. Ten children had at least one criteria of constipation: less than three stools per week (n=5), difficulties in defecation (n=7), and hard stools (n=3). Ten had gastrointestinal symptoms: abdominal pain (n=7) proctologic abnormalities (n=5), enuresis (n=2), and abdominal distension (n=2). Results of segmental colonic transit time are reported in the table. Seven of 12 children with Duchenne muscular dystrophy had an abnormal colonic transit time: three had stagnation of markers in the rectosigmoid area and four had an abnormal transit time in all the colonic segments. No relationship was found between colonic transit time and either gastrointestinal manifestations or gravity of muscular dystrophy.

Our results show that impairment of colonic transit time is frequent in Duchenne muscular dystrophy. Immobility, weakness of abdominal wall muscles and smooth muscle involvement of the colon might explain the high frequency of constipation in these patients.

Surfactant treatment for premature babies—a review of clinical trials

Sir,—In the review article on surfactant treatment,1 Survanta (Abbott Laboratories) is described as a frozen aqueous suspension. The current formulation of Survanta, recently approved for commercial use in the United States, is a suspension requiring refrigeration only. Before administration, Survanta vials are warmed to room temperature.

Pediatric Laboratory Medicine Fund of the Royal College of Pathologists

Sir,—Funds have been made available to promote scientific interchange in all branches of paediatric laboratory medicine in the UK.

Segmental colonic transit time in Duchenne muscular dystrophy

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Right colon* (hours)</th>
<th>Left colon* (hours)</th>
<th>Rectosigmoid* (hours)</th>
<th>Total* (hours)</th>
<th>Constipation</th>
<th>Other gastrointestinal symptoms</th>
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<tr>
<td>8</td>
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</tbody>
</table>

*Upper limits of normal range of colonic transit time in French children are right colon, <18 hours; left colon, <20 hours; rectosigmoid, <34 hours; and total, <62 hours.

Abnormal values underlined.

Plus (+) and minus (−) signs indicate present or absent.