LETTERS TO THE EDITOR

Radiological reliability in atlantoaxial subluxation

SIR,—I read with great interest the thought provoking article by Selby and associates.[1] The authors have found atlantoaxial subluxation in 18 out of 131 patients with Down's syndrome. Repeat radiographs performed at 10 minute intervals in 19 patients, including six with subluxation, showed that in three patients the abnormality was not seen in both sets of radiographs. They attribute the lack of radiological reliability to the changes in the muscle tone and ligamentous laxity. However, they fail to mention the position in which the radiographs were taken.

The horizontal ray lateral view taken with the patient in the supine position reveals the full extent of any abnormal slippage due to laxity of the transverse ligament as the weight of the neck muscles will force the odontoid process to separate from the anterior arch of atlas and serves as a dynamic test of integrity of the atlantoaxial joint, whereas, if the patient is examined erect or prone, the gap narrows.[2]

The other possible explanation for variability in the values could be due to improper technique of obtaining flexion and extension views. At the end of flexion movement, when the chin abuts against the sternum, some deflexion occurs at the level of cervico-occipital junction. The maximal flexion of the upper cervical segment is obtained only by drawing the head as far back as possible and then tucking the chin in. Correct extension of the upper cervical region is obtained by drawing the head forwards as far as possible and then extending without moving the neck backward.[3]

The odontoid peg has three ossification centres[4] and not four centres as mentioned by the authors.

Computed tomograms of the craniovertebral junction should be done before rejecting radiographs of the neck as unreliable at identifying atlantoaxial subluxation.

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1 Selby KA, Newton RW, Gupta S, Hunt L. Clinical predictors and radiological reliability in atlantoaxial subluxation in Down's syndrome. *Arch Dis Child* 1991;**66**:876–8.
2 Burrows EH, Leeds NE. *Neuroradiology*. Vol 1. London: Churchill Livingstone, 1981:415–42.
3 Penning L. *Functional pathology of the cervical spine*. Amsterdam: Excerpta Medica Foundation, 1968:196.
4 VanGilder JC, Menezes AH, Dolan KD. *The craniovertebral junction and its abnormalities*. New York: Futura Publishing, 1987:1–8.

Dr Selby comments:

I would like to make the following points in reply to the letter from Dr Prakash. Firstly, it is mentioned both in the text and in table 4 that the radiographs were taken in flexed, extended, and neutral positions in both the initial and in the repeated films. Secondly, I accept that correct positioning is important in radiological diagnosis of atlantoaxial subluxation and care was taken by experienced paediatric radiographers in the accurate positioning of the children. Information on odontoid hypoplasia can be seen in papers by McManners[1] and Elliot *et al.*[2]

Finally, the reason for our paper is that at present the recommendations of the Department of Health[3] and the American Academy of Pediatrics is that a child with Down's syndrome may or may not be eligible to partake in active sports dependent on the normality of plain radiographs of their cervical spine. We do not feel that these are valid recommendations.

I would agree that a child with neurological abnormality would need further investigation and subsequent intervention and stabilisation. I do not know of any study which has looked at a large number of children with Down's syndrome for atlantoaxial subluxation with tomography.

1 McManners T. Odontoid hypoplasia. *Br J Radiol* 1983;**56**:907–10.
2 Ellliot S, Morton RE, Whitelaw RAJ. Atlantoaxial instability and abnormalities of the odontoid in Down's syndrome. *Arch Dis Child* 1988;**63**:1484–9.
3 Acheson ED. *Atlanto-axial instability in people with Down's syndrome*. London: DHSS, 1986. (CMO(86)8.)

Abdominal pain in Henoch-Schönlein purpura

SIR,—We read with interest the report by Hu *et al* on the use of ultrasonography to diagnose and exclude intussusception in children with Henoch-Schönlein purpura.[1] We agree with the authors that ultrasound is an excellent, non-invasive procedure to assess for the presence of intussusception. We also agree that the incidence of intussusception in children with Henoch-Schönlein purpura is likely higher than reported.

We believe that the history and physical examination are the best ways to differentiate whether an intussusception is present. Our experience suggests that there are several kinds of abdominal pain in children with Henoch-Schönlein purpura. The most common abdominal pain is a dull, constant, periumbilical pain which is due to inflammation and bleeding in the intestinal wall and results from the underlying vasculitic process. This pain is not colicky and there are no peritoneal signs by abdominal examination. The abdominal pain associated with intussusception is characteristically colicky and intermittent. The stool may contain blood and mucous ('red current jelly' stool). Other symptoms and signs of intestinal obstruction such as vomiting, abdominal distension, and increased bowel sounds may be present. An abdominal mass may be palpable, and there may be a feeling of emptiness in the right iliac fossa. Peritoneal signs are absent. This intermittent colicky pain is usually superimposed against the background of the more common dull and constant periumbilical pain. If an intestinal perforation occurs, the abdominal pain is constant, generalised, and peritoneal signs such as abdominal wall rigidity and infrequent bowel sounds are evident by physical examination. Ureteritis has been reported in Henoch-Schönlein purpura and may also present with colicky pain.[2] This colicky pain may be distinguished from that due to intussusception by its location in the flank or the groin.

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1 Hu SC, Feeney MS, McNicholas M, O'Halpin D, Fitzgerald RJ. Ultrasonography to diagnose and exclude intussusception in Henoch-Schönlein purpura. *Arch Dis Child* 1991;**66**: 1065–7.
2 Kher KK, Sheth KJ, Makker SP. Ureteritis in Henoch-Schönlein purpura (HSP). *Kidney Int* 1982;**21**:152.

Multiple admissions under 2 years of age

SIR,—I read with interest the article by Spencer and Lewis and was extremely impressed by the figures they present as far as total admissions are concerned.[1]

We have undertaken some research in Portugal in all the paediatric departments of the country (85 hospitals). The results for years 1989 and 1990 are shown in the table.

Hospital admissions in 1989 and 1990

	1989	*1990*
Total births	118 560	116 383
Total children aged (years):		
1–4	500 000	487 000
5–9	740 000	731 000
Children admitted to hospital aged (years)*:		
0–1	13 019	12 443
1–4	15 179	14 503
5–9	10 923	10 856

*The study included paediatric departments only. Paediatric surgery, and surgery for ear, nose, and throat and orthopaedics, and other 'adult' departments were not included.

Our study aimed to gain some information about acute respiratory infections and we found that 24·96% of all admissions were caused by these infections. The figures were similar for central and district hospitals. In a one day study performed in 1990 in child health clinics of three districts of Portugal we found that 8·4% of children aged less than 2 years of age, who were attending the health centre on that day, had been admitted to hospital during the previous six months.

The psychological, emotional, physical, social, and economic consequences for the child, the family, and the admitting institution that is caused by admission have been fully described and are undoubtedly a major problem in social paediatrics. The article by Spencer and Lewis is an excellent contribution to this challenge.

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1 Spencer NJ, Lewis MA. Multiple admissions under 2 years of age. *Arch Dis Child* 1991;**66**: 938–40.