

² de Carvalho M, Hall M, Harvey D. Effects of water supplementation on physiological jaundice in breast-fed babies. *Arch Dis Child* 1981; **56**: 568-9.

³ Ansell C, Moore A, Barrie H. Electrolyte and pH changes in human milk. *Pediatr Res* 1977; **11**: 1177-9.

HERBERT BARRIE
Department of Paediatrics,
Charing Cross Hospital,
Fulham Palace Road,
London W6 8RF

Device for continuous urine collection in the newborn

Sir,

I read the detailed description given by Lund *et al.*¹ with great interest. Two years ago, while studying very preterm babies, I began to use an almost identical system. Since then I have made several modifications which have increased its versatility, simplified the changing of the slings, and greatly improved its acceptability for use with very small and immature subjects (Figure).

As our nursery is equipped with three different kinds of incubator it is inconvenient to use apparatus which matches the fittings of only one particular model. I therefore designed a Perspex tray, 62 × 33 cm, which can replace the mattress in the base of any incubator. A double slope was made to keep the apparatus shallow (height 7.5 cm) so that the baby remained in the normal nursing position within the incubator, and at the same time provided a sufficiently steep angle in the base of the tray for efficient urine drainage. Each end of the apparatus base consisted of a shallow Perspex 'valley' which sloped from either side at an angle of 15°; the central V was 3.5 cm below the top of the tray at either end and sloped lengthways towards the centre of the apparatus at 5°, reaching a drainage tube where the ends met. This arrangement gave excellent urine drainage despite the fairly shallow lengthways slope, as the urine tended to form a small rivulet in the central groove. In any case the flow could still be increased by using the incubator base tipping mechanisms which were not obstructed.

The most convenient arrangement was to lead the drainage tube out of the incubator through one of the

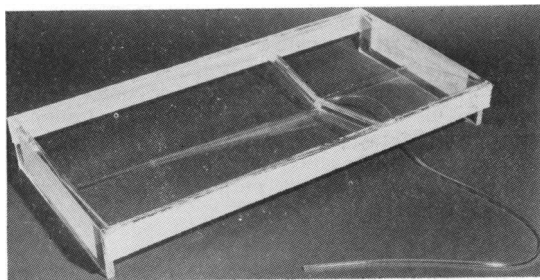


Figure Apparatus without sling.

low hood ports and then collect the urine into disposable plastic plasma transfer packs. Being expandable these bags required no venting, and being outside the incubator hood, modifications—such as collecting into a dry ice container—were easier and safer to make.

In response to comments from nurses about the awkwardness of fixing the sling with stainless steel rods we used velcro and this made sling-changing a quicker and easier procedure. Two 2 cm strips of the 'hooked' side of velcro were stuck either side of the tray and 3 strips at either end, and each cloth sling had the 'fur' side sewn along each edge.

The last modification was to substitute a softer, finer material for the 30 × 20 threads/inch nylon mesh which was used initially; although the nylon was satisfactory for the larger more mature babies it was too abrasive against the skin of smaller ones, particularly those below 1250 g. We now use georgette, a much softer, finer material with 100 threads/inch which we find allows the rapid passage of urine without absorbing any and which retains all but the most fluid of stools. Because of its very fine composition the edges of the sling which are stretched over the sides of the Perspex need to be reinforced with cotton or similar material. Even this material has produced a slight soreness over the knees and malleoli on babies of about 1 kg after 2 or 3 days' use.

Reference

- ¹ Lund R J, Valman H B, Platt A. Device for continuous urine collection in the newborn. *Arch Dis Child* 1981; **56**: 880-2.

M G COULTHARD
Princess Mary Maternity Hospital,
Great North Road,
Newcastle upon Tyne NE2 3BD

Henoch-Schönlein purpura after yersiniosis

Sir,

Henoch-Schönlein purpura has been associated with many infective agents, but I have been unable to find any reports connecting it with *Yersenia enterocolitica* infection.

A 5½-year-old girl was admitted with a 1-week history of abdominal pain and a 2-day history of tender ankle joints and purpuric rash on the legs. On admission typical Henoch-Schönlein maculopapular purpuric rash was noted on the buttocks and on the extensor surface of the legs. The ankle joints were tender and swollen. She complained of abdominal pain, and there was blood in the stool. Blood pressure and temperature were normal. Antibody titre against *Y. enterocolitica* serotype 3 was 200 at admission and 50 ten days later. Stool culture was negative. IgA was moderately raised and there was slight proteinuria. Platelet count, bleeding time, prothrombin, C₃ complement, and barium enema were normal.

In the first week after admission she continued to have severe abdominal pain and was given prednisone 20 mg

daily. When the steroid was stopped 2 weeks later, she was well and made an uneventful recovery. However for the next 9 months she continued to have slight proteinuria and recurrences of typical Henoch-Schönlein purpuric rash and abdominal pain. She was well one year later, with no proteinuria.

An important feature in Henoch-Schönlein purpura is the presence of raised levels of IgA immune complexes¹ as well as deposition of IgA in the glomeruli and blood vessels of the skin.² In addition to infective agents, drugs, food, and insect bites have been mentioned as possible antigens.²

In the present case the clinical pattern of Henoch-Schönlein purpura was characteristic; the fall in the antibody titre against *Y. enterocolitica* strongly suggests recent infection. It is possible that the Henoch-Schönlein purpura was caused by *Y. enterocolitica*.

I should like to know if others have noticed an association between *Y. enterocolitica* and Henoch-Schönlein purpura.

References

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N H RASMUSSEN
Paediatric Department,
Central Hospital,
7400 Herning,
DK Denmark

Copper from cooking utensils as a cause of Indian childhood cirrhosis?

Sir,

We report 10-month-old monovular twins reared separately; one developed Indian childhood cirrhosis (ICC) and the other remained healthy.

The first twin had, since birth, been fed on cows' milk that had been boiled and stored for as long as 6 hours in copper utensils. Semi-solids were not offered until age 10 months by which time clinical examination showed a firm smooth liver 5 cm enlarged, splenomegaly of 3 cm, but no jaundice, oedema, or ascites. Liver histopathology confirmed the diagnosis of ICC. The neutral formalin fixed paraffin embedded liver biopsy was stained by Shikata's method¹ and most hepatocytes contained multiple, coarse, and darkish brown orcein staining granules representing copper-associated protein.

The second twin had been breast fed from birth to age 10 months and then for one month had received cows' milk which had been boiled and stored in steel utensils. Clinical examination was normal.

Serum copper level and urinary copper excretion were high in twin 1 with ICC compared with the normal twin

Table 1 Biochemical values in twin 1 and twin 2

| Values | Twin 1 | Twin 2 |
|---|--------|--------|
| Bilirubin ($\mu\text{mol/l}$) | 38.5 | 13.7 |
| Total proteins (g/l) | 67 | 63 |
| Albumin (g/l) | 34 | 40 |
| Globulin (g/l) | 33 | 23 |
| Alkaline phosphatase KA/dl | 21 | 16 |
| AST IU/l | 58 | 16 |
| ALT IU/l | 90 | 14 |
| Hb (g/dl) | 9.6 | 10.2 |
| Serum copper ($\mu\text{mol/l}$) | 24.0 | 16.9 |
| Urinary copper ($\mu\text{mol/24 h}$) | 2.56 | 0.54 |

Conversion: traditional to SI units—bilirubin: 1 mg/100 ml \approx 17.1 $\mu\text{mol/l}$; serum copper: 1 $\mu\text{g}/100 \text{ ml} \approx$ 0.157 $\mu\text{mol/l}$; urinary copper: 1 $\mu\text{g}/24 \text{ h} \approx$ 0.0157 $\mu\text{mol}/24 \text{ h}$.

Serum and urinary copper were determined by an atomic absorption spectrophotometer. Normal levels at age 1 year in our laboratory are 102.6 \pm 16.3 $\mu\text{g}/100 \text{ ml}$ and 28.5 \pm 9.3 $\mu\text{g}/24 \text{ h}$.

Table 2 Copper values in cows' milk when boiled and stored in copper and steel utensils

| | Copper utensil | | | | Steel utensil | | | |
|---------------|----------------|------|------|------|---------------|------|------|------|
| | A | B | C | D | A | B | C | D |
| Copper (mg/l) | 0.39 | 0.91 | 2.03 | 3.04 | 0.39 | 0.40 | 0.40 | 0.41 |

A=fresh milk sample; B=milk boiled; C=milk stored for 3 hours; D=milk stored for 6 hours.

Copper level in drinking water was 70 $\mu\text{g/l}$.

(Table 1). Table 2 shows the high copper content in milk boiled and stored in copper utensils used for twin 1 compared with the milk stored in steel utensils used for twin 2.

We have found levels of serum and hepatic copper to be high in ICC.² The source of excessive copper seems to be copper cooking utensils. A survey of the feeding pattern³ in ICC showed that milk was boiled and stored in copper utensils in 75% cases, in steel utensils in 15%, and in aluminium utensils in 9%. We conclude that the method of feeding may increase the copper intake and cause ICC.

References

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B BHANDARI AND B SHARDA
Department of Paediatrics,
RNT Medical College,
Udaipur-313001,
India