Neonatal respiratory distress due to mumps

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SUMMARY We report an infant of 35 weeks' gestation who developed severe respiratory distress and pneumonitis due to perinatal mumps virus infection.

It is unusual that mumps virus should be responsible for neonatal respiratory distress. To our knowledge only one case has been described.¹ We report a case in which infection was probably transplacentally acquired and resulted in severe pneumonitis.

Case report

A male infant was born at 35 weeks' gestation weighing 2530 g after a normal pregnancy. After spontaneous rupture of the membranes, delivery was induced after a rise in temperature to 38.5°C. Given the risk of infection, the child, whose results of clinical and bacteriological tests were normal, was treated with antibiotics. On the third day of life his temperature rose to 38.5°C. On the sixth day oral feeding was stopped because of bilious gastric aspirates and abdominal distension and replaced with parenteral nutrition. On the seventh day tachypnoea and cyanosis developed. A chest x ray film showed irregular opacities. On day 13 hepatomegaly, tachycardia, and coughing were observed. Echocardiography was normal. The persistence of severe respiratory distress necessitated endotracheal intubation and mechanical ventilation. Six days later the child's state improved rapidly, allowing extubation. Oral feeding was started again. Antibiotics were carried on for 23 days. Results of a hearing test by an auditory cradle were normal, and the child was discharged. He was seen again one month later and showed no further symptoms.

Bacteriological cultures of blood, faeces, urine, and tracheal excretions and from the umbilical catheter were negative. Cerebrospinal fluid collected on days 2, 6, 17, and 23 was normal. Plasma amylase activity was 700 U/l, 10 times the normal, with normal plasma lipase activity. Blood count on day 8 was haemoglobin 154 g/l, white blood cell $5 \times 10^9/l$ (2.6×10^6 polymorphonuclear leucocytes and 2.2×10^6 lymphocytes), and on day 14 was haemoglobin 124 g/l, white blood cell $20 \times 10^9/l$ (11.3×10^6 polymorphonuclear leucocytes, 7.3×10^6 lymphocytes, and 1.8×10^6 monocytes). Mumps virus

Table *Isolation and serology of the mumps virus on the patient and his family*

Day	Patient		Mother	Brother	Father
	10	24	24	24	24
Mumps virus isolation	+	-	-	-	-
Mumps antibodies tests:					
Complement fixation	1/32	1/256	1/192	1/96	1/32
Indirect IgG	1/128	$\geq 1/2048$	$\geq 1/2048$	$\geq 1/2048$	1/128
*ELISA IgM	1/512	$\geq 1/1024$	1/128	Negative	Negative

*ELISA=Enzyme linked immunosorbent assay.

was isolated from a throat swab taken on day 9. A significant rise in mumps antibodies was shown by complement fixation test and by an indirect enzyme linked immunosorbent assay (ELISA test) for the presence of IgM antibodies (see Table). No mumps virus antibodies were found in the cerebrospinal fluid. On day 24 tests for mumps virus antibodies were carried out on the child's family: the mother had high antibody concentrations of IgM and IgG classes, and a 4 year old brother had high concentrations of IgG antibody only.

Comment

This neonate showed an unusual response to mumps virus infection shown by severe respiratory distress and pneumonitis without parotitis. The mother had no obvious signs of mumps infection during pregnancy, but latent or unusual forms of infection are common. The presence of high concentrations of mumps antibody with IgM specificity allows a rough dating of maternal infection to the last weeks of pregnancy or at delivery. Fever at this time may be the only clinical sign of a primary mumps infection. The mother probably acquired her infection from her first son who had high IgG antibody concentrations. The baby may have been infected transplacentally because the delay of three days before the onset of the disease is considerably shorter than the incubation period.

Mumps virus can cross the placenta: it has been isolated from a 10 week old fetus spontaneously aborted after maternal mumps parotitis.² The inci-

dence of mumps infection has been variously estimated as between 0.8 and 10 cases per 100 pregnancies.³ During mumps, virus initially replicates in the epithelium of the upper respiratory tract. A viraemia follows, and there is often prolonged excretion of virus in the urine for two to three weeks. Only six cases of mumps virus infections occurring at the end of pregnancy have been described.^{3,4} Four infants developed a parotitis during the first week of life, one child remained asymptomatic, and no virus was isolated. One child was admitted on the seventh day of life with high fever and respiratory distress, which resulted in a week of ventilation.¹ The outcome was good and one year later the child was still well. Common features with our case were general illness, respiratory distress, latent period, and good prognosis after symptomatic treatment.

Mumps infection in the newborn can be misleading because of the lack of apparent parotitis or meningitis. It emphasises the value of systematic early virologic studies in any neonatal infection.

References

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Received 8 October 1985

Comparison of ultrasound examination and intravenous urography after a urinary tract infection

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SUMMARY The results of ultrasound examination and intravenous urography after a urinary infection were compared in 100 children. Thirty seven had an abnormality on urography, but in 12 this was not seen on ultrasound. One of these had renal scarring, the remainder only minor abnormalities.

Investigations after a urinary tract infection are carried out to detect factors predisposing to infection (obstruction lesions and gross vesicoureteric reflux) and early renal scarring. Until recently this involved an intravenous urogram (IVU) and micturating cystourethrogram in all children after the first infection.¹ These investigations involve irradiation, are unpleasant, and have potential complications. A selective approach has been advocated with an IVU in all cases, a micturating cystourethrogram being deferred until a second infection in children with a normal IVU.² This still means that an IVU is carried out on all children with an infection. Ultrasound examination is painless, free from side effects, and would be an acceptable alternative investigation if the abnormalities mentioned above could be reliably detected. A preliminary report comparing ultrasound and IVU in children with an infection showed

only a small number (10%) of false negatives.³ The age of the patients, however, was not given, and, as the risk of renal damage is much higher in young children,⁴ this is important. We report a study comparing ultrasound examination and IVU in 100 children, 59 of whom were under 5.

Material and methods

One hundred children, 71 girls and 29 boys, were investigated after a urinary tract infection. The diagnosis of infection was based on urine culture showing 10^5 or more organisms per ml. Eleven were aged under 1 year, 48 between 1 and 5, and 41 over 5.

The renal tract of each child was imaged with ultrasound and then immediately afterwards by an IVU.

All ultrasound examinations were performed by one radiologist (DL) using the 5 MHz probes of the Hitachi EUB-25 linear array scanner and the ATL mark 300 sector scanner. The kidneys were assessed for congenital anomalies and for evidence of renal scarring. Dilatation of the distal ureters was looked for closely as this might suggest reflux. If possible the pelvis was scanned when the bladder was full.