Milky urine in a premature infant: Questions

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Case presentation

Twins of Italian non-consanguineous parents were delivered by emergency caesarean section at 30 weeks because of maternal hypertension. Twin 2, a male infant, weighed 990 g and did not present any abnormalities at external examination. His Apgar score at 5 min was 7 and he required ventilatory support with nasal CPAP, shortly after delivery. An umbilical vein catheter (UVC) was placed at admission in the neonatal intensive care unit and infusion of parenteral nutrition was started. Antibiotic prophylaxis was started with ampicillin and gentamicin as routine prevention of neonatal infection. At day 4 of life, the UVC was removed and a 28-gauge (1 French), 20-cm-long silicone catheter (Premicath, Vygon, UK) was inserted in the left saphenous vein. The length of the catheter to be inserted was measured and line was introduced to its full length. The position of the line was checked by X-ray examination without contrast injection. The tip of the catheter was located in inferior vena cava and a good flush back on gentle aspiration was obtained. From day 2 of life, minimal enteral feeding was started with human milk, and parenteral nutrition was continued with the infusion of water, 33 % dextrose, 8 % amino acids, and 20 % lipid. On day 6 of life, the baby became hypoglycemic (blood glucose less than 30 mg/dl), despite the increase of glucose administration up to 12 mg/kg/min. The infant's general condition worsened

with the onset of desaturation and apnea, which required non-invasive ventilatory support. Biochemistry blood tests showed hypoproteinemia (plasma proteins 2.7 g/dl) and hypoalbuminemia (serum albumin 1.8 g/dl). Protein C reaction was negative and full blood count was normal for age. At the same time, the child began to be polyuric (urine output 8 ml/kg/h), and the passed urine turned cloudy and milky (Fig. 1).

Fig. 1 Sample of patient's milky urine

Urine samples were analyzed and a huge amount of fatty acids, proteins, and glucose were detected. Blood and urine cultures were sterile. The abdominal ultrasound scan did not detect abnormalities, except for a small amount of free liquid between the intestinal loops.

Questions

1. What are the causes for milky urine?
2. Which is the most probable reason for milky urine in this infant?
3. Which examination is necessary for the diagnosis?

The answers to these questions can be found at <http://dx.doi.org/10.1007/s00467-013-2647-9>.

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