

## Acute cyanosis in a child after percutaneous placement of a peritoneal dialysis catheter: question

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Received: 17 September 2008 / Revised: 2 December 2008 / Accepted: 3 December 2008 / Published online: 27 January 2009  
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### Case summary

A 6-year-old girl with end-stage renal disease due to focal segmental glomerulosclerosis was admitted for percutaneous placement of a peritoneal dialysis catheter. The physical examination before the procedure revealed a child with a pale appearance and a weight of 16 kg (25th–50th percentile) and a height of 95 cm (<3rd percentile). Her vital signs were in normal range. Baseline laboratory test values were as follows: white blood cells (WBCs) 14,700/ $\mu$ l (55% neutrophils); hemoglobin (Hb) 7.4 g/dl; hematocrit (Htc) 21.1%; platelets (PLTs) 242,000/ $\mu$ l; glucose 95 mg/dl; urea 256 mg/dl; creatinine 3.8 mg/dl; aspartate aminotransferase (AST) 38 U/l; alanine aminotransferase (ALT) 27 U/l; sodium ( $\text{Na}^+$ ) 138 mEq/l; potassium ( $\text{K}^+$ ) 4.4 mEq/l. The results of clotting tests were normal. Arterial blood gas

analysis in room air showed a pH of 7.34, carbon dioxide partial pressure ( $\text{pCO}_2$ ) 40.5 mmHg, oxygen partial pressure ( $\text{pO}_2$ ) 96 mmHg, and bicarbonate ( $\text{HCO}_3^-$ ) 20.8 mEq/l. Just prior to the procedure, local anesthesia with 10 ml prilocaine (20 mg/ml) was induced at the linea alba, 2 cm below the umbilicus. During the procedure, the patient's oxygen saturation was above 94%, shown by pulse oximetry. The peritoneal dialysis (PD) catheter was inserted successfully. Two hours later the patient developed central and peripheral cyanosis, without significant respiratory distress. Her body temperature was 37°C; heart rate 98 beats/min; respiratory rate 24 breaths/min; blood pressure 90/60 mmHg; oxygen saturation 76% (measured by peripheral transcutaneous pulse oximetry) in room air. Findings from cardiac and pulmonary examination were unremarkable. Although a non-rebreather mask was immediately placed, no improvement of the child's color and oxygen saturation was observed. Echocardiography and chest X-ray findings were normal. Arterial blood gas analysis revealed that pH,  $\text{pO}_2$  and  $\text{pCO}_2$  were 7.35, 97 mmHg and 27 mmHg, respectively. Her hemoglobin level was 7.6 g/dl. Central cyanosis and low oxygen saturation in conjunction with normal arterial  $\text{pO}_2$  level persisted. Her glucose-6-phosphate dehydrogenase (G6PD) level was normal (4.2 U/g Hb).

The answer to this question can be found at <http://dx.doi.org/10.1007/s00467-008-1109-2>.

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### Questions

1. Which diseases should be considered in the differential diagnosis of this child with abrupt-onset cyanosis?
2. Which diagnostic test confirms your diagnosis?
3. How is this condition treated?