

CASE REPORT

PDA PRESENTING AS ACUTE RESPIRATORY FAILURE

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On July 20, 2000 (18/04/1421), a 3 ½ months old female infant was admitted in paediatric ICU at Armed Forces Hospital, Najran, K.S.A. with a history of cough and shortness of breath. The infant had history of cough and wheezing off and on since birth. On examination she was in respiratory distress with chest indrawing, tachypnoea and tachycardia, but had normal body temperature. She had bilateral chest wheezing on auscultation. The paediatrician started treatment with I.V. antibiotics, steam inhalation, salbutamol nebulisation, Inj. Lasix and O₂ with face mask.

Her condition deteriorated steadily and on July 22, 2000 she developed acute respiratory failure. The anaesthesiologist was immediately called for resuscitation.

On examination, the infant was clinically in acute respiratory failure with marked cyanosis, in spite of O₂ therapy with face mask. ABG's at that time showed PO₂ 21.6 mmHg and PCO₂ 85.4 mm Hg. Infant was immediately intubated and ventilated with 100% O₂ by Ambu bag. She improved immediately; cyanosis and tachycardia settled and she became pink again. She was put on ventilator in SIMV mode, with FIO₂ 60% which was later on reduced to 30%. She was sedated with morphine. 5mg and Dormicum infusion at the rate of 6mg/hour intravenously.

On investigation, her Hb was 7.5 gm and she had hypocalcaemia and hypokalaemia. Infant was transfused packed cells twice and hypokalaemia and hypocalcaemia was also corrected. TPN was started. She improved well with stable haemodynamics. SaO₂ rose to 98% with FiO₂ 30% and normal ABG's and serum electrolytes.

During the course of treatment she developed pulmonary edema and fever, and was managed with PEEP of 5-7.5 cm H₂O, Inj. Lasix and broad spectrum antibiotics.

An attempt to wean her from ventilator was not successful and she developed respiratory distress and hypoxaemia without respiratory support.

Bedside echocardiography was done, which showed large VSD (1.7cm), L - R shunt, dilated LA & LV and doubtful PDA.

Later on the infant was transferred to Prince Sultan Cardiac Centre Riyadh on ventilator. She was diagnosed as having PDA but no VSD. PDA was closed surgically, and she made smooth post operative recovery. When seen 01 month after surgery her respiratory symptoms had settled completely and she was doing fine and was pink.

DISCUSSION:

Haemodynamically significant PDA is rare in term infants, however it is quite common among premature babies. The incidence of haemodynamically significant PDA is 42% in premature infants weighing <1000gm and 20.2% in premature infants weighing <1750gm. In term infants PDA closes soon after birth in response to increased arterial oxygen tension. However in preterm there is reduced response due to thinner, poorly contractile muscle layer as well as reduced stimulus because of hypoxia due to RDS. On third to fifth day with the resolution of RDS, pulmonary resistance is decreased, resulting into blood shunting from systemic to pulmonary circulation by way of PDA. This results into pulmonary vascular overload and ultimately left heart failure. Pulmonary congestion worsens respiratory failure resulting into hypoxaemia & CO₂ retention.

PDA should be suspected in infants (especially premature) when there is sudden exacerbation of respiratory failure, tachycardia, tachypnoea, and widened pulse pressure like in our case. Typical continuous or machinery murmur is usually not present; systolic murmur and hyperdynamic precordium are nearly always present. Diagnosis is confirmed by echocardiography that demonstrates left atrial enlargement. Two dimensional echocardiography is usually able to identify the aortic end of ductus. Continuous wave Doppler can detect abnormal flow in pulmonary artery. Color Doppler can visualize the jet of abnormal flow.

Initial treatment is medical, which includes fluid restriction, diuretics and indomethacin. Indomethacin 0.1 – 0.2 mg / kg, three doses 12 hour apart, usually closes ductus within 24 hours by decreasing the synthesis of prostaglandin (PGI₂, PGE₂). These PG's otherwise relax smooth muscles of ductus and keep it patent. If ductus does not close with medical treatment, surgical ligation is indicated.

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	<p><i>Maj Liaqat Ali graduated from Army Medical College, Rawalpindi in December 1983. He served as GDMO in various hospitals and fields units before joining grading course in anaesthesiology in 1988. He served as graded anaesthesiologist in military hospitals. He qualified FCPS-I examination. Then he was sent on secondment to Kingdom of Saudi Arabia, from there he has been recently repatriated.</i></p>
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SHOULD OPERATIONS BE POSTPONED OR EVEN REFUSED ?

The anaesthetist frequently has to make a decision about whether a patient is fit for surgery, or whether they should be postponed or even denied possible anaesthesia. This calls for skillful judgement, and the safety of the patient must be the overriding concern. Although considerable risks may be have to be taken, they should not be taken unless the perceived benefits clearly exceed these risks. There should be full discussion with the patient and perhaps the relatives. Patients may want to take serious risks because they believe that they personally will not die as a result.

An elective operation should always be postponed if there has been insufficient time for adequate preparation. The anaesthetist must be firm with his or her colleagues in this regard ! postponement may also be needed when postoperative facilities, such as an intensive care bed, are temporarily inadequate. As a last resort, consider transfer to another hospital.

Decisions about postponement or cancellation of surgery call for great tact with all those affected, and must be tightly argued. Subsequently, the patient may be accepted by another (often less experienced) anaesthetist without being informed about the previous cancellation ! It may be humbling to discover that your colleague 'got away with' the risks you though were unjustified.

By: GB Rushman, Davies NJH, Cashman JN (editors) "Lee's Synopsis of Anaesthesia", 12th edition.