Aerosolized iloprost and oxygen for assessment of pulmonary vasoreactivity in children with pulmonary hypertension

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Background: The evaluation of pulmonary vascular reactivity plays a significant role in the management of patients with pulmonary hypertension. Inhaled nitric oxide in combination with oxygen has become widely used as an agent for pulmonary vasodilator testing. However, inhaled nitric oxide is not available in many developing countries. Recently, aerosolized iloprost was suggested as an alternative to nitric oxide for this purpose.

The present study employed aerosolized iloprost together with oxygen to identify pulmonary vasoreactivity in children with pulmonary hypertension and made use of the synergistic effect of both vasodilators.

Methods: The study registered a total of 16 children whose mean age was 5.06±3.88 with severe pulmonary hypertension. Hemodynamic parameters were quantified before and after the vasoreactivity test. At catheterization, patients who were found to have either PVR > 6 WU m² or Rp/Rs > 0.3 received aerosolized iloprost (Ilomedine®; Schering AG, Berlin, Germany). Aerosolized iloprost was administered at a dose of 25 ng kg⁻¹ min⁻¹ diluted in 1.5 ml of isotonic saline solution and nebulized for 10 minutes with O₂ through face mask to achieve alveolar deposition of the drug.

Increased left-to-right shunt, pulmonary vascular resistance being < 6 WU.m² and pulmonary-systemic resistance ratio being < 0.3, as well as a decrease > 10% in the pulmonary vascular resistance and pulmonary-systemic vascular resistance ratio after the vasoreactivity test were accepted as a positive response.

Results: Eleven children gave a positive response to the vasoreactivity test, while 5 children did not respond. Pulmonary vascular resistance dropped from 9.98±1.39 WU.m² to 5.08±1.05 WU.m² (p = 0.013) and the pulmonary-systemic vascular resistance ratio fell from 0.68±0.08 to 0.32±0.05 (p = 0.003) in the children who were responsive.

Discussion: Administration of inhaled iloprost in combination with oxygen for pulmonary vasoreactivity testing can be useful to correctly identify pulmonary vasoreactivity without extending the duration of cardiac catheterization.