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Letter to the Editor

Irreversible Cardiac Changes After Dexamethasone Treatment for Bronchopulmonary Dysplasia

Dexamethasone continues to be used in the treatment of severe bronchopulmonary dysplasia [5]. Dexamethasone-related cardiac side effects, which include septal hypertrophy and left ventricular outflow tract obstruction, are usually reversible [1, 2, 4, 8]. We report a case of severe dexamethasone-induced cardiomyopathy with an ultimately fatal outcome.

M.E.S. was delivered by cesarean section due to premature labor at a gestational age of 25 weeks with a birth weight of 975 g. After initial severe respiratory distress syndrome the patient developed massive BPD. Because of failure to wean from mechanical ventilation under conventional therapy, a total of five courses of dexamethasone (DXM) were given. The standard dosage regimen was 0.5 mg/kg/day tapered over 10 days with modification according to the clinical course. DXM repeatedly facilitated weaning and allowed several periods without mechanical ventilation.

Initially, increases in intraventricular septum (IVS) diameter were within the normal range [7] and completely reversible. Severe septal hypertrophy up to 12 mm developed during the fourth course of DXM and regressed almost to normal with dose reduction and concomitant administration of a calcium antagonist. An unusually rapid and irreversible increase in IVS thickness was observed following a total of 0.6 mg/kg of DXM given over 4 days (Fig. 1).

At about 5 months of age the child developed pneumonia. On day 145 of life he died from sudden cardiac arrest refractory to resuscitation procedures.

Postmortem microscopic examination revealed areas with enormous hypertrophy of septal cardiomyocytes and formation of giant nuclei next to normal myocardium. Furthermore, diffuse fibrosis as well as circumscribed areas with massive fibrotic changes were found.

Our case provides further evidence that dexamethasone should only be used restrictively because its beneficial effects on neonatal chronic lung disease may be compromised by serious and sometimes fatal side effects. A lower initial dose [2, 6] and short-term courses [3, 6] may help to reduce complications while still being effective. Repeated use of dexamethasone should also be viewed critically because there might be a sensitizing effect on the immature myocardium leading to an increased and accelerated development of septal hypertrophy (Fig. 1).

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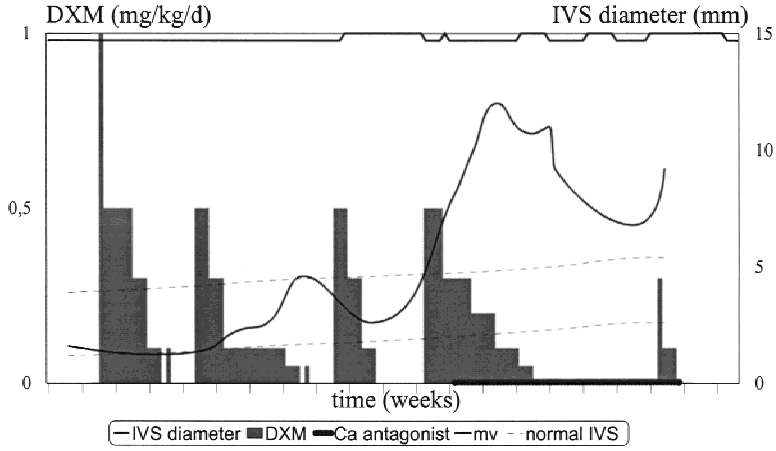

Fig. 1. Relation between dexamethasone (*DXM*) therapy and interventricular septum (*IVS*) diameter over time. Also represented are the normal range for IVS diameter corrected for body weight, duration of calcium antagonist administration, and mechanical ventilation. *Ca antagonist*, calcium antagonist; *mv*, mechanical ventilation (bottom line, period of mechanical ventilation; top line, no mechanical ventilation).

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