The use of dornase alpha for postoperative pulmonary atelectasis after congenital heart surgery

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Objective: To investigate the efficacy of dornase alpha (DA), a mucolytic agent, in children who developed pulmonary atelectasis following congenital heart surgery.

Method: Design: Retrospective observational study.
Setting: Pediatric cardiac intensive care unit at a tertiary care education hospital.
Patients: Between July 2011 and July 2012, 41 patients who underwent cardiac operations due to congenital heart disease and developed postoperative pulmonary atelectasis after congenital heart surgery that was resistant to conventional treatments and chest physiotherapy.
Interventions: Twenty-six patients received DA treatment. As a control group, 15 patients who were treated with conventional medications were chosen. Study groups were matched for age and diagnosis.
Results: The median age of patients in the study and control groups was 25.5 (3 - 480) days and 50.0 (3 - 480) days, respectively. While 15 (57.6%) of 26 patients from the study group were male, 8 (53.3%) of 15 patients from the control group were male. The median weight was 4.2 (2.9 - 14.2) kg in the study group and 4.0 (3.5 - 13.6) kg in the control group. In the study group, pulmonary atelectasis was diagnosed at a median period of 5 (2-18) days after operations, whereas in the control group atelectasis was diagnosed at a median period of 6 (3 – 19) days after operations. In the study group, the median atelectasis score decreased from 3.4 (1 – 6) to 0.8 (0 – 3) (p= 0.001). The median pO2 level increased from 69 (17 – 142) mmHg to 89 (30 – 168) mmHg (p = 0.04). Besides, heart rate and respiratory rate per minute were significantly decreased (p < 0.05). There was no significant change in the control group.
Conclusions: The use of DA can be effective and safe for the management of pulmonary atelectasis that develops following congenital heart surgery.