

MP4-9

Feasibility of lung ultrasound in pediatric cardiac surgery: a new basic tool for pediatric cardiologist. Preliminary experience.

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Background: Lung ultrasound (LUS) is gaining consensus as a non invasive, easy, fast and low cost technique for the diagnosis of pulmonary disease. Pulmonary complications are very common in pediatric cardiac surgery. Despite this of LUS remain limited. Aim: to test the feasibility of LUS in pediatric cardiac surgery.

Methods: From June 2015 to November 2015, 380 LUS examinations have been performed examination in 103 pts (0-17 years). Of these 62 children (median age 6 months, range 1 day-16,7 years) who had one or more examinations at fixed post-operative times (12-24 hours, at 5-7 days and before discharge) were selected. According to standardized protocols for each hemi-thorax 3 major areas (anterior/lateral/posterior) have been evaluated separately and every area has been further divided into the upper/lower half. We mainly evaluated the presence/degree of B lines, the presence/severity of pleural effusion/atelectasia.

Results: lateral examination was always feasible while anterior and posterior areas were approachable only in 67% and 85% respectively (due to medications and difficult in mobilization). B lines were present in all post-operative patients. The percentage of B lines did not vary from 12-24 hours versus 5-7 days (respectively $90\pm 7\%$ vs $90\pm 10\%$) while reduced significantly at discharge ($51\pm 13\%$ $p < 0.0001$).

Pleural effusion (from mild to severe) were diagnosed in 58% at 12-24 hours, in 50% at 5-7 days, and in 25% before discharge. Atelectasis (from trivial to severe) were present in 73% at 12-24 hours; in 80% at 5-7 days, and in 30% before discharge. Atelectasis were seen in isolation in 29% while in the remaining were associated to pleural effusion There were no difference in distribution and severity of effusion and atelectasia among the two lungs.

The posterior approach was much more sensible than anterior/lateral in the diagnosis and severity estimation of effusion/atelectasia (Kappa coefficient ranging from 0.00 to 0.09).

Conclusions: LUS is feasible after pediatric cardiac surgery at all the ages. LUS allows differential diagnosis and severity estimation of effusion/atelectasis and the posterior approach is much more accurate than anterior/lateral for this setting. Wider studies are necessary to reinforce these data and provide new information.

Figure-1: Example of moderate atelectasis.

