

Impact of chest x-ray before discharge in children after cardiac surgery – prospective evaluation

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Introduction: Chest x-rays are performed routinely before discharge after cardiac surgery in many paediatric cardiac units. These radiographs contribute to radiation exposure, therefore indications for chest x-rays should be restrictive.

Objective: To evaluate the diagnostic impact of routine chest x-rays before discharge in children undergoing open heart surgery and to analyze certain risk factors predicting pathologic findings.

Methods: In a prospective single centre observational clinical study 128 consecutive children undergoing heart surgery (mean age 28months, range 0–17.9years, 69 male) received a biplane chest x-ray 13 days (mean) after operation, before planned discharge. Pathologic findings in chest x-rays were defined as infiltrate, atelectasis, pleural effusion, pneumothorax or signs of fluid overload / pulmonary hypercirculation. Their therapeutic consequences were documented. 109 asymptomatic children were included in the final analysis. Risk factors such as age, corrective versus palliative surgery, reoperation, sternotomy vs. lateral thoracotomy and pulmonary complications (i.e. pulmonary infection, pleural effusion, atelectasis, pneumothorax) during postoperative ICU (Intensive Care Unit) stay were analysed.

Results: In only 5.5% (6/109) of these asymptomatic patients pathologic findings in routine chest x-ray before discharge were found - pleural effusion (n=1), atelectasis (n=1), pneumothorax (n=1), signs of fluid overload (n=3). In only three of these cases (50%) subsequent non-invasive medical intervention (increasing diuretics) was needed. Five of these six patients have had complications during ICU stay. Risk factor analysis revealed only pulmonary complications during ICU stay to be significantly associated ($p = 0.036$) with pathologic x-ray findings before discharge.

Conclusions: Routine chest x-rays before discharge can be omitted in asymptomatic children after cardiac surgery with an uneventful and straightforward perioperative course. Chest x-rays before discharge are warrantable if pulmonary complications during ICU stay did occur as this is a risk factor for pathologic findings.