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Pulmonary hemorrhage complicated with cardiac catheter examination and intervention in children

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[Introduction]
Pulmonary hemorrhage is the life-threatening complication of cardiac catheter examination and intervention. We investigate the frequency and risk factors of pulmonary hemorrhage, because there are a few reports about these.

[Methods]
We reviewed the clinical records retrospectively. From July 2003 to June 2013 (10 years), 1744 patients were done the cardiac catheter examination and intervention. From this group, we select the patients diagnosed with pulmonary hemorrhage. We defined the pulmonary hemorrhage as which was recognized by the hemoptysis or the bleeding from an intratracheal tube during or immediately after the cardiac catheter examination and intervention.

[Results]
10cases (7 patients; mean age 13months) were diagnosed with pulmonary hemorrhage complicated with cardiac catheter examination and intervention. 3cases occurred in catheter examination, 2cases in pre-interventional examination, and 5cases in intervention (2 coil embolization, 2 balloon angioplasty, 1 stent placing). Pulmonary hemorrhage occurred 0.6% of all 1744 catheterized cases(examination or intervention), 0.8% of all interventions, 0.4% of all examinations. 7 cases were under 18 months old and the other 3 cases were 4 years old. Underlying diseases varied; AVSD 2, TOF 1, HLHS 1, MAPCA 1, PV stenosis 1, PA/IVS 1case. Cyanosis is recognized in 9 cases, systemic-to-pulmonary collateral vessels were recognized in the rest 1 case. Hemorrhagic spot wasn't detected in all cases. 9 cases of all 10 cases were examined under general anesthesia with intratracheal intubation. Therefore, we could handle quickly, and they could recover without sequel except one case. One case required resuscitation immediately after the hemorrhage due to the shock status, and it led mild dysfunction in legs.

[Conclusions]
Pulmonary hemorrhage occurred not only in catheter interventions but also in examinations. Children with cyanosis or under 18months old may carry the potential risk of pulmonary hemorrhage. When we treat these patients, we need tight management system at the prospect of pulmonary hemorrhage.