

Impact of Asymptomatic Upper Respiratory Viral Shedding in Pediatric Cardiothoracic Surgical Patients

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Intraoperative and postoperative complications associated with symptomatic upper respiratory infections in young children are well-documented; however, asymptomatic upper respiratory viral shedding is frequent and may be prolonged. Identification of viral shedding by PCR is an attractive opportunity, as optimizing health preoperatively reduces postoperative complications including prolonged hospitalization and patient morbidity and mortality. However, necessary pediatric cardiac surgical procedures could be delayed with recognition of asymptomatic viral shedding without clinical significance. This study aimed to assess if a positive preoperative respiratory viral panel PCR (+ RVP) impacted postoperative length of stay in the pediatric intensive care unit (PICU) or hospital and assessed for an association among + RVP and adverse clinical events. Patients < 3 years old presenting to a freestanding children's hospital for cardiothoracic surgery from March 2018-March 2020 were enrolled. Within 24 hours before surgery, an RVP via nasopharyngeal swab for PCR was collected from subjects. Chart review was completed after hospital discharge. Mean difference between RVP status and length of stay for PICU and hospital was assessed with an independent, two group, sample t-test. Logistic regression was used to test association between RVP status and adverse clinical events (ventilator-associated pneumonia, surgical-site infection, prolonged fever, ventilator use, or antibiotics), adjusted by complexity of surgical procedure using the Risk Adjustment in Congenital Heart Surgery-1 (RACHS-1) score. 95 subjects were included, 50% female, 75% Caucasian; 39% had + RVP (Table 1). There was no statistical association between RVP status and length of PICU ($p=0.35$) or hospital stay ($p=0.28$) (Table 2). Odds ratio for extubation in the OR was significantly associated with +RVP, though small sample size and wide confidence intervals limit generalizability of this observation. There were no clinically significant associations between RVP status and adverse events. This limited, single-center study suggests that preoperative RVPs in pediatric cardiac surgery candidates identified asymptomatic viral shedding in 39%, though provided no detectable clinical benefit. Larger studies are needed to fully explore specific adverse clinical events and individual viral pathogen impacts. Institutional policies requiring preoperative RVP screening for pediatric cardiac surgery should be discouraged.