Complications and mortality related to non-cardiac surgery in adult congenital heart disease: Results of a nationwide study including 20,450 cases

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Topic(s):
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Citation:

BACKGROUND:

Adults with congenital heart disease (ACHD) represent a growing patient population with high morbidity and increasing health resource utilization. In addition to acute and chronic cardiac complications, these patients require numerous non-cardiac surgical procedures during their lifetime. Limited data on the morbidity and mortality risk related to non-cardiac surgical procedures exist in contemporary CHD patients. The aim of this study was to analyse the frequency and outcome of non-cardiac surgical procedures in contemporary ACHD patients based on all hospital admissions in Germany between 2011 and 2016.

METHODS:

Based on the German diagnosis related groups data of patients treated between 2011 and 2016 we identified all ACHD patients treated surgically as inpatients for non-cardiac problems. The dataset contains information on patient demographics, primary and secondary diagnoses, interventional or surgical procedures, duration of stay and outcome including mortality. The primary endpoint of the study was surgery related mortality as well as major adverse events (defined as death or myocardial infarction, stroke, pulmonary embolism, sepsis or resuscitation).

RESULTS:

Overall, 48,872 ACHD cases were hospitalized during the study period. Of these, 20,450 (41.8%) were hospitalized for non-cardiac surgical procedures. The median age at surgery was 50.0 years and 62.9% of patients were male. The overall mortality rate following non-cardiac operations was 2.8% (95% CI 2.6-3.0%). The highest mortality rates were observed for procedure codes involving pharynx, larynx or trachea (27.2%; 95% CI: 22.3-32.1%) and lung surgery (15.4%; 95% CI: 13.3-17.8%). Abdominal surgery (9.2%; 95% CI: 7.7-10.9) and neurosurgical procedures (7.8%; 95% CI: 5.4-10.9) also had relative high mortality rates. The major adverse event rate overall was 12.7% (95% CI 11.7 – 12.7%). The highest major adverse event rates were observed for surgery of the airways (43.2%; 95% CI: 40.2%-46.4%).

CONCLUSIONS:

Non-cardiac surgical procedures are common in ACHD patients and are associated with considerable mortality and morbidity in this cohort. Especially, surgical procedures involving the airways or neurosurgery emerged as risky procedures. However, even for routine abdominal or orthopaedic surgery considerable mortality and morbidity was observed. Overall, our data support careful pre-operative patient evaluation and concentration of surgical procedures at centres with extensive surgical and anaesthetic experience with ACHD patients.
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