

## **Hemodynamic Effects of Sevoflurane versus Dexmedetomidine**

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### **ABSTRACT**

**Background:** Cardiac catheterization procedures produce challenges for the anesthetist because of the increased need to provide support in sedating and/or anesthetizing patients.

**Objective:** To compare pulmonary and systemic hemodynamics of two anesthetic regimens: sevoflurane as volatile induction maintenance anesthesia and dexmedetomidine as total intravenous anesthesia in pediatric patients suffering from congenital heart disease with left-to-right intracardiac shunt.

**Design:** A Prospective Randomized Study.

**Setting:** Mansoura University Children Hospital (MUCH), Egypt.

**Method:** Sixty pediatric patients of both sexes were referred for elective cardiac catheterization. Patients were randomly allocated into two equal groups, consisted of 30 patients. In the first group, the patients received volatile induction maintenance anesthesia (VIMA) with sevoflurane (GS group) while in the second, the patients received total intravenous anesthesia (TIVA) with dexmedetomidine (1 µg/kg) intravenous bolus dose over 10 minutes, anesthesia was maintained by intravenous infusion of dexmedetomidine at a rate of 1-2 µg/kg/hour (GD group).

**Result:** The present study showed that the heart rate (HR), Pulmonary blood flow index (QpI), Systemic blood flow index (QsI) and Qp/Qs ratio were comparable in both groups. Pulmonary vascular resistance index (PVRI) and Systemic vascular resistance index (SVRI) were significantly lower in GS group after induction of general anesthesia (GA) if compared with the basal value maintaining PVR/SVR at baseline value. However, PVRI and SVRI were insignificantly higher in GD group after induction of GA if compared with the basal value; thus, maintaining PVR/SVR. The Systemic Mean arterial blood pressure (MAP) decreased in both groups.

**Conclusion:** Total intravenous anesthesia with dexmedetomidine provided hemodynamic stability. It is comparable to volatile induction and maintenance of anesthesia with sevoflurane when administered to pediatric patients suffering from congenital heart disease with left-to-right intracardiac shunt during cardiac catheterization.