The radiation burden to children from percutaneous ultrasound-guided central venous access device insertions is small, in the order of that received during a chest radiograph” Bajaj et al (2017).

Abstract:

Permanent central venous access is essential for the management of many pediatric patients. Knowing the amount of ionizing radiation used during the insertion of these devices is important. Our aim was to identify the radiation used in percutaneous insertion of central venous access devices, and to correlate radiation exposure to patient weight.

METHODS: Data was prospectively collected during a 12-month period from August 2015 to August 2016 on all ultrasound-guided percutaneous central venous access device insertions. An image intensifier was used in all insertions with data on radiation dose and screening time extracted, when available. The total radiation dose was measured in mGym2 and the total radiation time in seconds. A p-value <0.05 was used to denote statistical significance.

RESULTS: A total of 145 central venous access devices were inserted (82 portacaths, 43 double lumen lines, 16 single lumen lines and 4 hemocaths) in 127 patients (Median Age: 5.5 years (Range 0-17); Median Weight 21kg (Range 1.9-100)) with 15 patients requiring multiple insertions over the course of the study. Of these, 88 had data captured for total radiation dose and time used and a further 23 had screening time only recorded. Median radiation dose was 0.00599 mGym2 (range 0.000543-0.148) with a median fluoroscopic screening time of 18s (range 2-479). Median dose was higher for children <10kg compared to larger children, 0.00661 mGym2 (range 0.00202-0.0468) versus 0.005715 mGym2 (range 0.000543-0.148) respectively. Left-sided internal jugular vein (IJV) insertions also had a higher median radiation dose of 0.0091 mGym2 (range 0.00142-0.148 mGym2) versus 0.005245 mGym2 (range 0.000543-0.0285 mGym2) for right-sided IJV insertions.

CONCLUSION: The radiation burden to children from percutaneous ultrasound-guided central
venous access device insertions is small, in the order of that received during a chest radiograph. Weight $<$10kg and access of the left IJV are associated with receiving higher doses.

Reference:


Thank you to our partners for supporting IVTEAM