UNIVERSITY OF LATVIA

79th International Scientific Conference of the University of Latvia

The comparison of diagnostic reference levels for paediatric CT examinations

Šiukšterytė Monika[1], Gricienė Birutė[1]

[1] Vilnius University, Faculty of Medicine, Vilnius, Lithuania

- **Background**. CT imaging delivers a substantially higher ionizing radiation dose and causes an increased risk of cancer. Children's developing organs and tissues are more vulnerable to cellular damage than those of adults. Diagnostic reference levels (DRLs) are an essential tool for monitoring and optimizing patient exposure.

- **Aim**. To perform literature analysis on paediatric national DRLs for head CT examinations in other countries and compare data with established national DRLs in Lithuania.

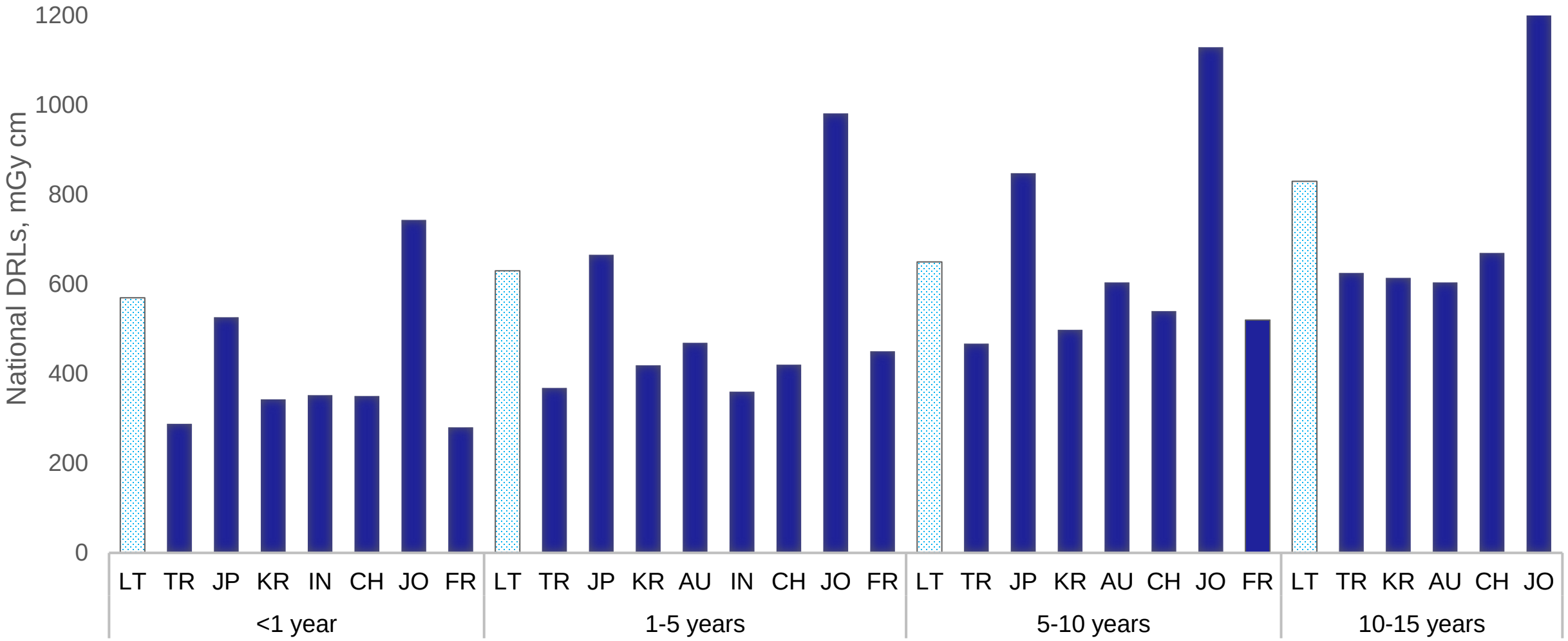
- **Methods**. Literature analysis was performed on *PubMed* search engine on inclusion criteria: publication date 2015–2020, used keywords *paediatric computed tomography, paediatric CT, national diagnostic reference levels (DRLs)*. The 23 articles discussing paediatric national DRLs were further analysed.

Research Results

- Data analysis shows that different countries examine patients using relatively different values of scan parameters (tube current (mAs), tube voltage (kV), scan length (mm), slice thickness (mm) and pitch), which results in varying exposure doses (CTDI, DLP) for the same CT examinations.

- The national DRLs reported in Lithuania were compared with data of other 8 countries based on the same age grouping method (<1, 1–5, 5–10 and 10–15 years).

Comparison of paediatric national DRLs for head CT examinations



Note: LT – Lithuania, TR – Turkey, JP – Japan, KR – South Korea, AU – Australia, IN – India, CH – Switzerland, JO – Jordan, FR – France.

Conclusions

- The results of our study show that the established national DRLs (DLP values) for head CT are generally higher than in other countries except Jordan and Japan.

- There is a limited number of publications on this topic at European level, therefore it is imperative to establish national and local DRLs in hospitals.

- The results of our study indicate further need for research on children's exposure during CT procedures and setting new DRLs for Lithuania.