Background and aims: The question of cancer risks associated with postnatal diagnostic medical exposure involving ionising radiation in childhood is particularly relevant given the growing use of diagnostic examinations, especially computed tomography scans, in children. Although several studies have indicated that in utero exposure to radiation from diagnostic radiography is associated with increased risk of cancer, the association between postnatal diagnostic exposure and risk of cancer remains controversial (Linet, 2009, Schutz-Rath, 2008, Wakeford, 2008).


Results: 12 case-controls studies and 7 cohort studies have been identified. Heterogeneous results were found for postnatal diagnostic medical exposures and leukaemia. An excess of breast cancer has been observed in cohorts of girls and young women subjected to multiple diagnostic radiation exposures for spine deformities. No significant effect of postnatal exposures was observed for other cancer sites (Non-Hodgkin lymphomas, solid tumours and brain tumours). One of the key concerns is that results from most of the epidemiological studies on postnatal radiography are based on data from interviews with parents allowing for the possibly of bias. Besides, most studies have limitations in study size and involve very low exposure.

Conclusions: As the expected cancer risks are small, epidemiological studies require very large sample sizes and long periods of follow-up combined with a good dosimetry assessment. In this context, newly launched cohort studies on cancer risks associated with exposures to CT scans during childhood will provide new results in the future.

References:
Wakeford R. Childhood leukaemia following medical diagnostic exposure to ionizing radiation in utero or after birth. Radiat Prot Dosimetry 2008, 132(2): 166-74