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## Pediatric Tumors and Developmental Anomalies: A French Nationwide Cohort Study

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## Abstract

**Objective:** To assess the associations between congenital abnormalities and pediatric malignancies and evaluate the potential underlying molecular basis by collecting information on pediatric cancer patients and congenital abnormalities.

**Study design:** Tumeur Et Développement (TED) is a national, prospective and retrospective multicenter study recording data of children with cancer and congenital abnormalities. When feasible, blood and tumoral samples are collected for virtual biobanking.

**Results:** From June 2013 to December 2019, 679 associations between pediatric cancers and congenital abnormalities were recorded. The most represented cancers were central nervous system tumors (n=139; 20%), leukemia and myelodysplastic syndromes (n=123; 18.1%) and renal tumors (n=101; 15%). Congenital abnormalities were not related to any known genetic disorder in 66.5% of cases. In this group, the most common anomaly was intellectual disability (22.3%), followed by musculoskeletal (14.2%) and genitourinary anomalies (12.4%). Intellectual disability was mostly associated with hematologic malignancies. Embryonic tumors (neuroblastoma, Wilms tumor, and rhabdomyosarcoma) were associated with consistent abnormalities, sometimes with a close anatomical neighborhood between the abnormality and the neoplasm.

**Conclusions:** In the first TED analysis, three major themes have been identified: 1) germline mutations with or without known cancer predisposition, 2) post-zygotic events responsible for genomic mosaicism, 3) coincidental associations. New pathways involved in cancer development need to be investigated to improve our understanding of childhood cancers.

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