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Tracking down the origin of cancerous stem cell programs in pediatric leukemia

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There are a few key issues in the pathogenesis of pediatric leukemia: How is the stem cell program reprogrammed when normal hematopoietic stem or progenitor cells (HSCs or HPCs) are converted into leukemic stem cells (LSCs)? How to distinguish between cancers that are initiated in utero and those originating after birth? What medical implications are to distinguish these different origins of the disease? And where are LSCs resident after they are formed, not being killed by chemotherapy. We have addressed these issues in human acute leukemia (AL). We for the first time identified a pre-leukemic stem cell (pre-LSC) in the context of a pair of twins, when one got AL the other was healthy (Science 319: 336). Subsequently we demonstrated that stem cell programs in leukemic lymphoblasts are retained from HSCs rather than conferred on HPCs (Oncogene, 34:2083). We next identified a diagnostic biomarker to determine prenatal origin of childhood leukemias, which can distinguish childhood LSCs from normal HSCs in the postnatal bone marrow (BM) and may thus provide a tractable target for therapy in childhood leukemias, killing LSCs and sparing normal HSCs (under peer-review). Recently we reported a therapy-induced niche within the leukemic bone marrow which protects LSCs from chemotherapy (Cancer Cell 25:778). In the conference talk I may talk these stories focusing on the translational perspectives of these discoveries in pediatric cancers.

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Pain experience in children with advanced cancer in the ministry of home affairs hospital, Lilongwe, Malawi

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It is important for health care professionals to understand the pain experience in children with advanced cancer. There has been increased attention to this topic, but systematic studies are limited. The aim of this study was to examine pain symptoms and management in children with advanced cancer using child self-report and nurse documentation. A prospective, longitudinal method was used to collect data from 62 children over a 6-month period. Children were of ages 5 to 12 years, with advanced cancer. Nurses also provided data. Across all interviews, pain was reported 53% of the time by all children. Nurses documented pain only 25% of the time. Children most frequently reported head pain (30%), followed by abdomen, lower back, leg, and feet pain (21%). Children consistently reported more intense pain compared with nurses. Nonopioids were used more frequently (43%) than opioids (32%), and nurses' perception of pain intensity was more highly correlated with administration of opioids ($r=0.77$, $P<0.005$). Children who died during their participation in this study received more opioids over time. Pain intensity was relatively stable over time. Child self-report and nurse documentation of pain differed, as did pain management among children who died compared with those who did not. Ethnicity differences in the identification and management of pain by nurses begs further study. Overall, nurses were aware of and responsive to pain and pain management.

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