ALTERED CELLULAR METABOLISM IN MALIGNANT TRANSFORMATION AND THERAPY RESPONSE IN ACUTE LEUKEMIAS

Júlia Starková

CLIP – Childhood Leukemia Investigation Prague, Department of Pediatric Hematology and Oncology, Second Faculty of Medicine, Charles University, Prague

The cancer metabolic program alters bioenergetic processes to meet the higher demands of tumour cells for biomass production, nucleotide synthesis, and NADPH-balancing redox homeostasis. It is widely accepted that cancer cells mostly utilize glycolysis, as opposed to normal cells, in which oxidative phosphorylation is the most employed bioenergetic process. Still, studies examining cancer metabolism had been overlooked for many decades, and it was only recently discovered that metabolic alterations affect both the oncogenic potential and therapeutic response. Since most of the published works concern solid tumours we aim to study the metabolism of leukemia cells. Leukemia is a malignant disease that ranks 1st and 5th in cancer-related deaths in children and adults, respectively. Current treatment has reached its limits due to toxicity, and there has been a need for new therapeutic approaches. One of the possible scenarios is improved use of established drugs, and another is to introduce new druggable targets. We aim to describe the role of metabolic alterations in leukemogenesis and progression of the disease and highlight cellular processes that could be targeted therapeutically and enhance the effectiveness of current treatments.