Personalized analysis of circulating tumor dna as a sensitive biomarker in non-hodgkin lymphoma

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Abstract

Background: Non-Hodgkin lymphoma (NHL) consist of a diverse group (including >50 subtypes) of malignant tumors affecting the lymphatic system. Although children diagnosed with NHL generally experience high survival rates, metastasized or recurrent disease remains associated with a poor prognosis.

Objective: Current methods for disease monitoring and detection of recurrence are limited to image-based techniques, which lack sensitivity and may increase the risk of long-term complications in children with NHL. Therefore, there is an urgent need for more sensitive and less invasive methods to evaluate treatment response and detect relapse in this patient group. As a non-invasive biomarker, circulating tumor DNA (ctDNA) has shown significant potential in evaluating treatment response and identifying recurrence in many adult cancer types.

Methods: In this study, we evaluated the use of patient-specific ctDNA analysis from plasma to monitor treatment effectiveness and identify disease relapse in children with NHL. We developed patient-specific sequencing panels targeting 10 single nucleotide variants for 11 children with NHL, and applied a highly sensitive next generation sequencing technique (SiMSen-Seq) for ctDNA analysis.

Results: Preliminary results from analysis of nine patients show a stepwise reduction in ctDNA levels during effective treatment while one case of disease relapse was associated with increased ctDNA levels.

Conclusion: The results of our study indicate that ctDNA analysed with a personalized approach, serves as a sensitive and specific maker of tumor burden in pediatric NHL patients.

Do you have any conflicts of interest?

Yes, I have a conflict of interest.

A. Ståhlberg declares stock ownership in SiMSen Diagnostics and Iscaff Pharma. A.S declare stock ownership and is board member in Tulebovaasta. A. Ståhlberg is co-inventor of the patent protected SiMSen-Seq technology (U.S. Serial No.:15/552,618).