

A longitudinal evaluation of smell and taste function in children with cancer during and after chemotherapy

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Background & aim

Smell and taste changes are bothersome treatment symptoms interfering with food intake. It remains unclear how and when children with cancer experience such changes during chemotherapy, and if the symptoms resolve after treatment.

Methods

In this longitudinal study, children undergoing chemotherapy were included. Smell and taste function were assessed using Sniffin' Sticks (odor threshold and identification) and Taste Strips, respectively. Measurements were taken approximately 6 weeks (T0), 3 months (T1), 6 months after starting chemotherapy (T2), and 3 months after termination of chemotherapy or maintenance phase for children with acute lymphoblastic leukemia (ALL) (T3).

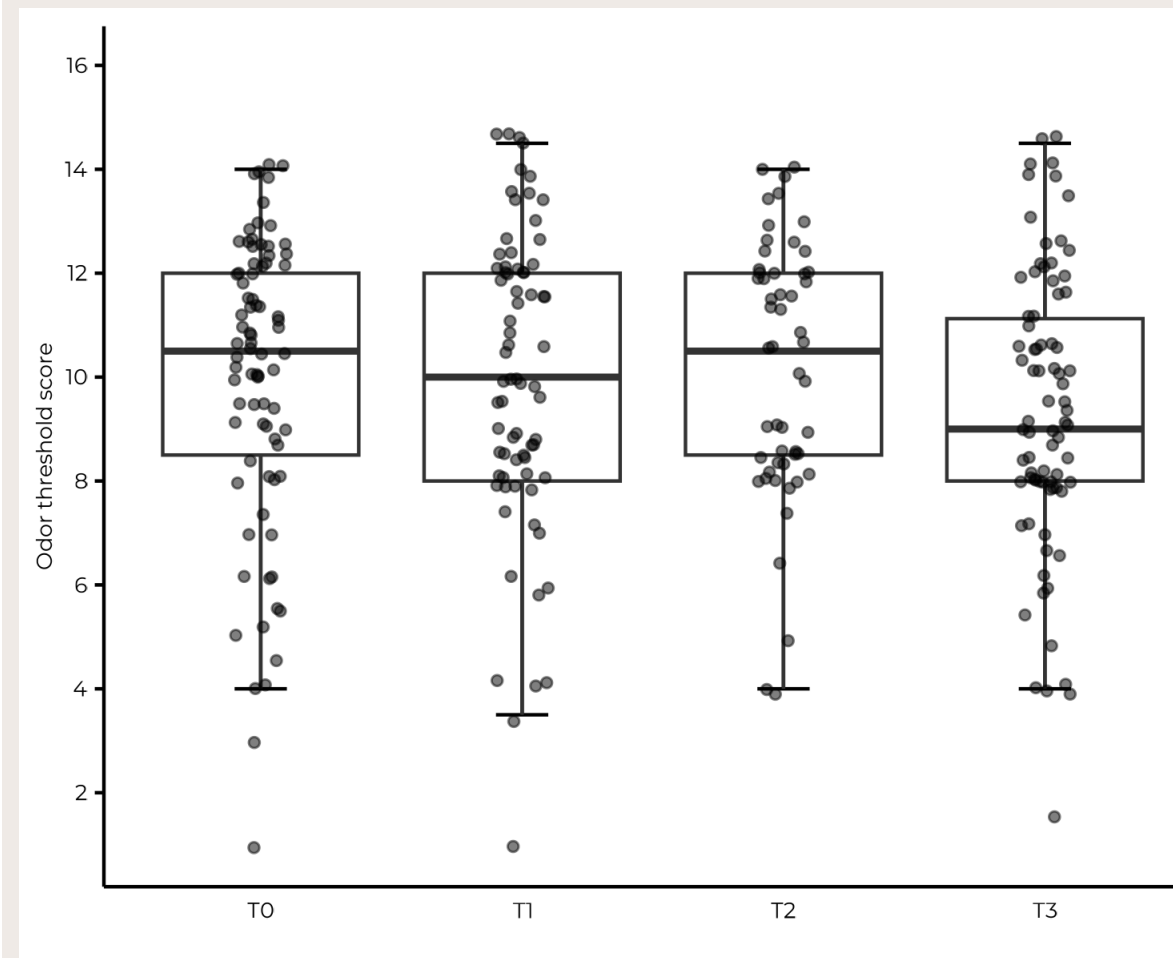
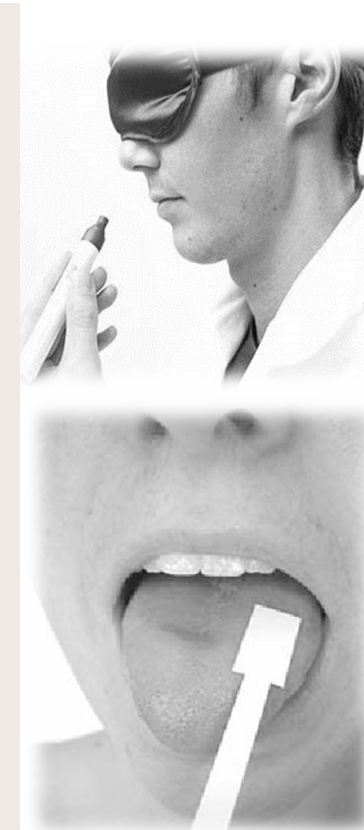


Fig 1A: **odor threshold** scores

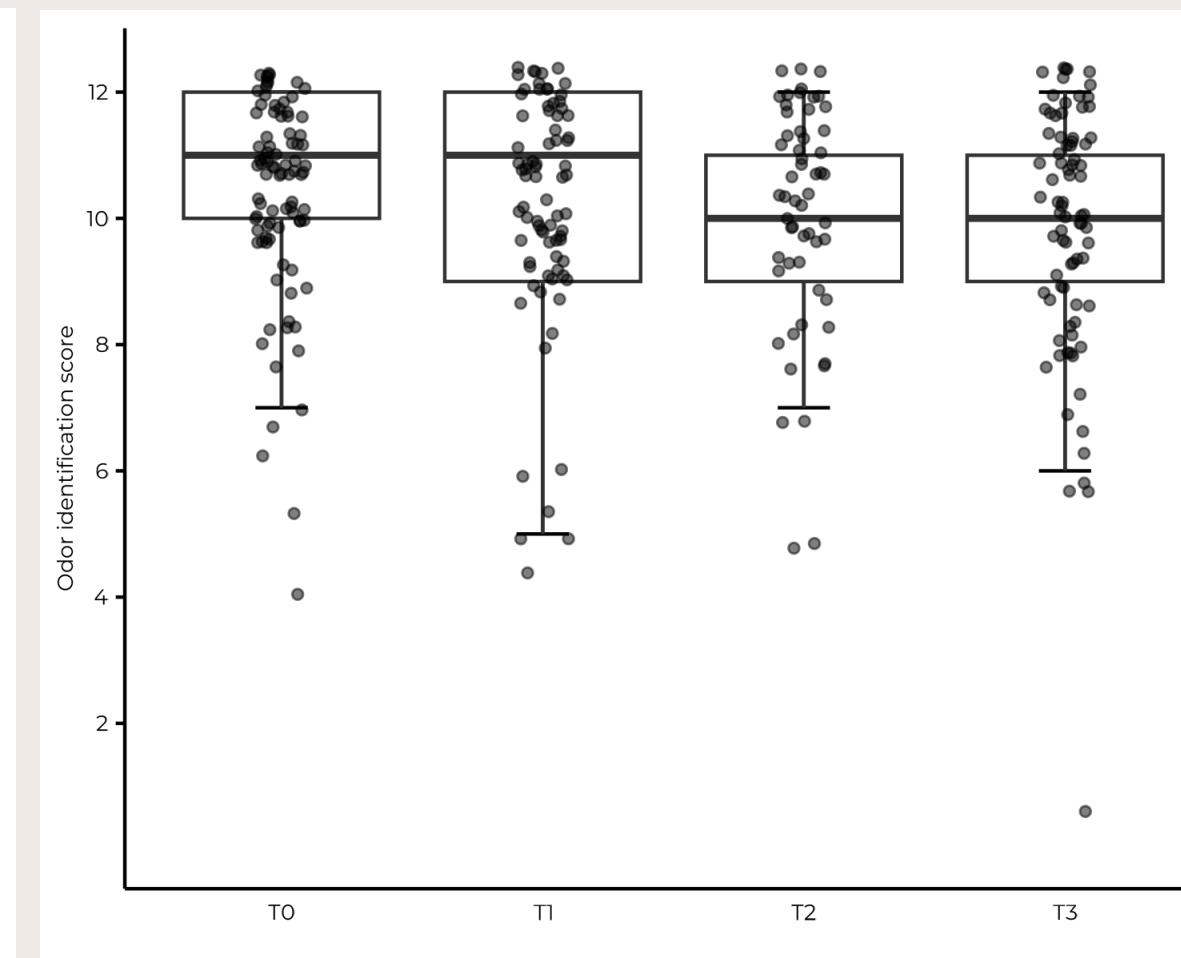


Fig 1B: **odor identification** scores

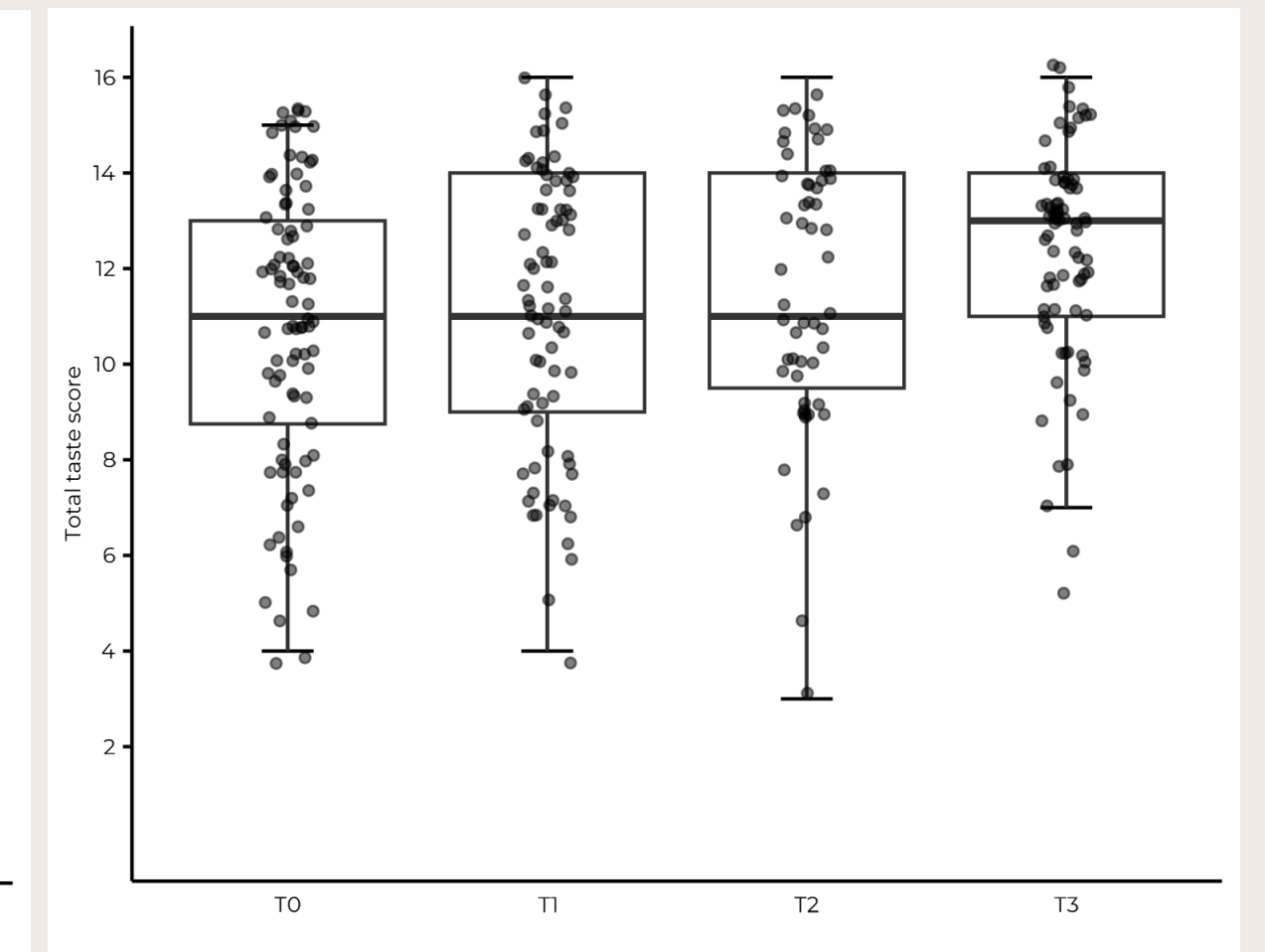


Fig 1C: **total taste** scores

Smell and taste dysfunction

When using normative values for the smell tests, a normal ability to identify odors was significantly lower than expected which was not the case for odor threshold. Approximately 20% of the patients suffered from decreased taste function, particularly children with lymphoma or solid tumors.

Self-report

Self-reported changes were much more common than objectively measured, with smell changes ranging from 26 to 53% and taste changes up to 80% during treatment. Changes in smell sensitivity were predominantly characterized as 'increased' rather than 'decreased', whereas taste changes were frequently described as 'food tasting different than before'.

Results

In total, 94 children diagnosed with a hematological (74.5%), solid (21.3%), or brain (4.3%) malignancy were included. Median age was 12 years (range 6 – 17) and 51.1% were girls.

Longitudinal evaluation

Odor threshold (Fig. 1A) and identification scores (Fig. 1B) did not change during active treatment (T0-2). Odor threshold scores significantly decreased in children with ALL during maintenance phase. Total taste scores (Fig. 1C) also did not change during active treatment, but increased in all children at T3.

Conclusions

Objectively measured smell and taste function remained stable during active treatment. However, odor threshold scores decreased in children with ALL during maintenance phase, suggesting increased sensitivity during active treatment, whereas total taste scores increased in all children at T3, suggesting decreased taste sensitivity during treatment. At the individual level a fairly large number of children suffered from chemosensory distortions which comprised either increased or decreased sensitivity. Individual dietary advice and coping strategies are warranted to prevent detrimental effects on food intake in children with cancer.