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ALTERED METABOLISM AND BODY COMPOSITION IN CHILDHOOD CANCER SURVIVORS AFTER HAEMATOPOIETIC STEM CELL TRANSPLANTATION

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Background and aims

Haematopoietic Stem Cell Transplantation (HSCT) is a crucial treatment for several childhood malignancies. However, conditioning regimen before HSCT is associated with metabolic dysfunction and abnormal body composition in childhood cancer survivors (CCS). Nevertheless, it is not clear whether these effects are affected by gender, which was the aim of this study.

Methods

At least 2 years since the end of treatments, data of CCS with hematologic or solid tumours were collected on: body mass index Z-score(BMI-Z); fat mass(FM) and Fat-to-Lean mass Ratio(FLR) from DEXA measurements; serum ALT and IGF-1 levels. Variables were reported as median[25th-75thpercentile] or percentages and compared with Fisher's exact and Mann-Whitney test.

Results

We assessed 154 CCS(82M/72F); median age and BMI-Z were 12.8[11.2-14.8] years and 1.4[0.5-2.4], respectively. According to the analysed variables, in females undergoing HSCT(n=18), treatment was associated with increased FM(40%[36-49] vs. 36%[32-40],p=0.011), FLR(0.66[0.57-0.94] vs. 0.56[0.48-0.67],p=0.011) and decreased IGF-1(-0.5[-2.1-0.3] vs 0.8[-0.7-1.1],p=0.047) compared to non-HSCT females, whereas no association was detected with higher ALT levels. On the contrary, in males undergoing HSCT(n=24), treatment was associated with higher ALT levels(18[16-31] vs. 15[12-19],p=0.004), but neither with increased FM and FLR, nor with decreased IGF-1 as compared to non-HSCT males.

Conclusions

The unfavourable metabolic late effects of HSCT were different in CCS according to gender. Specifically, males presented hepatic dysfunction, whereas females were characterized by fat gain, impaired metabolism and altered body composition, possibly due to other concurrent factors, such as hormonal puberty alterations. Further longitudinal studies with larger samples are required, to confirm these preliminary observations and develop specific preventive nutritional interventions.