



Long-term follow-up of cranially irradiated childhood leukemia survivors show cognitive impairment and progressive decline in sustained attention, in spite of complete hormone replacement

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Conclusion

34 years after ALL diagnosis, we report persistent cognitive impairment and a progressive decline in sustained attention in survivors on complete hormone replacement. The survivors with overweight had the most attenuated impairment in cognitive function. Intervention strategies should be multidimensional and include tailored psychosocial and healthy life-style support and proper hormone replacement.

Background: Survivors of childhood leukemia (ALL) treated with cranial radiotherapy (CRT) are at risk for cognitive impairment. Whether the impairment progresses with follow-up time and if survivors with cognitive impairment have an increased risk for overweight, is unknown. Previous studies lack information of hormone status and of matched population controls. We aimed to investigate the long-term cognitive functioning in ALL survivors treated with CRT and to compare them to matched controls.

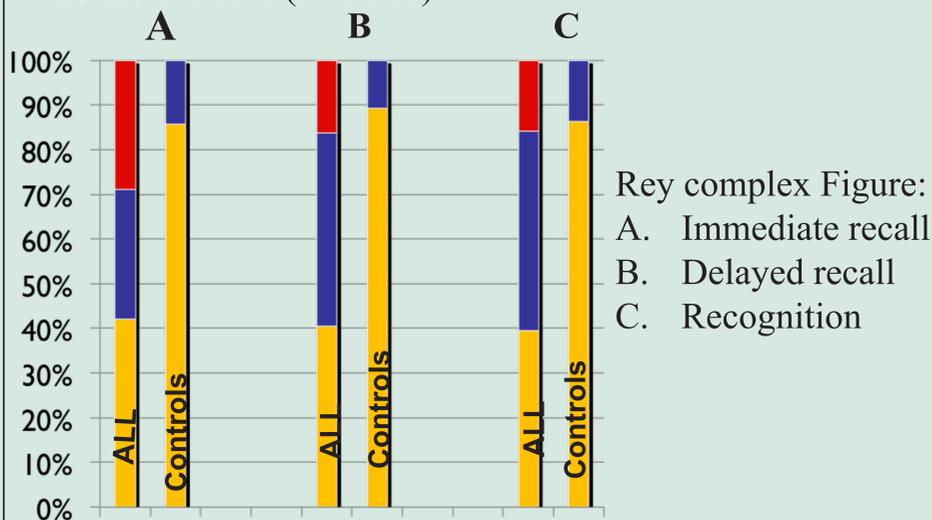
Method

- Cognitive functioning
- 38 ALL vs 29 controls, matched for gender and age
- CRT of 24 Gy and chemotherapy
- Median age of diagnosis was 5 years (1-17)

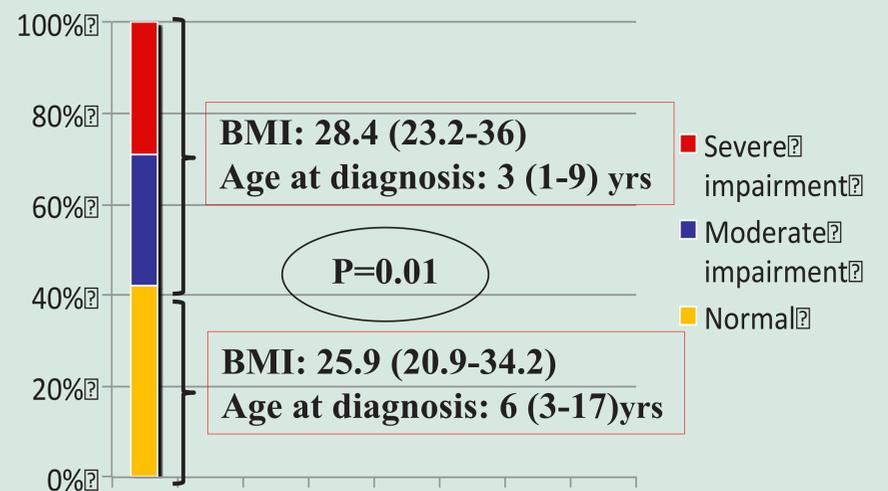
- Median age at follow-up was 38 years (33-46)
- Follow-up of 34 years (26-40) after diagnosis
- 95% were treated with growth hormone,
- 16% were treated with Thyroxine
- one survivor needed Cortisone

Results

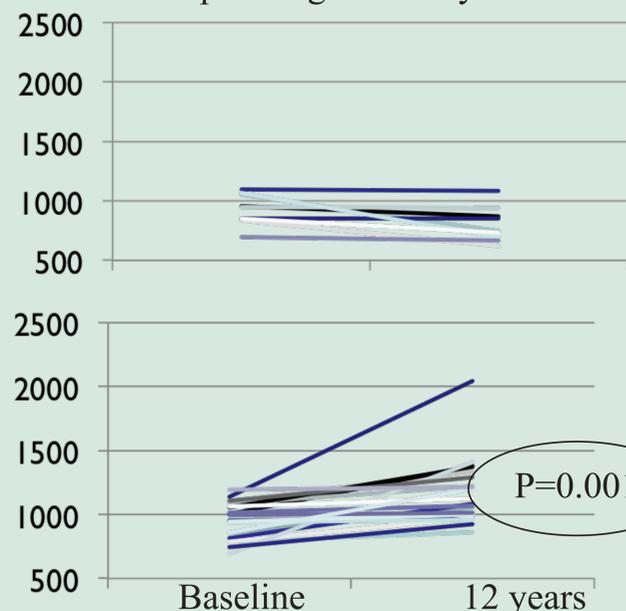
Raw scores for tests of visuospatial functions and episodic memory in 38 ALL survivors compared to 29 local controls and age-adjusted normative data (P<0.001)



Difference in BMI and age at diagnosis between ALL with impairment of visuospatial functions and episodic memory compared to ALL with normal results



Change in sustained attention between initial testing and follow-up testing after 12 years in ALL survivors



32% did not demonstrate an impairment

68% demonstrated an impairment after 12 years
38% demonstrated an impairment of > 15 % together with a Significantly higher BMI of 28.6 (17-36.4)

After 34 years of treatment and compared to controls survivors demonstrated a lower performance in:

- Vocabulary
- Memory
- Learning capacity
- Spatial ability
- Executive functions
- Attention

P<0.001