Body Mass Index of Adolescent and Adult Survivors of Pediatric Acute Lymphoblastic Leukemia

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Background

- Acute lymphoblastic leukemia (ALL) is the most common childhood cancer in the U.S.
- ALL can cause long-term health conditions called late effects.
- Survivors who are overweight or obese as measured by their body mass index (BMI) may face an increased risk of developing other health problems such as heart diseases and second cancers.
- Studies that have examined the impact of pediatric ALL on adult or adolescent BMIs have found mixed results, which make it difficult for health providers to counsel ALL patients about appropriate weight-management strategies.

Objectives

Conduct a meta-analysis of studies that investigate BMI among adult/adolescent survivors of pediatric ALL with the goals of generating:
1) Overall effect size on the prevalence of obesity
2) Effect size for U.S. studies
3) Effect size by sex

Study Inclusion Criteria

- ALL patients diagnosed at <21 years of age and age at study ≥ 16 years
- Reported BMI after end of cancer therapy.
- Included comparison sample/population norms.
- Peer-reviewed journals.
- N=11 studies fulfilled these criteria.

Data Coding

- Data on research design, subject characteristics and effect size were coded by two investigators.
- Coded data was cross checked by two other investigators.
- Blind coded data validity of 30% studies by other investigator.

Effect Size and Statistical Analysis

- Odds Ratio (OR) & 95% Confidence Interval (95% CI) of overweight/obese and normal weight ALL survivors versus ratio of overweight/obese and normal controls.
- Fixed effects model for weighted OR and S.E.

Conclusions and Recommendations

- Only 11 studies have examined BMI among adult/adolescent survivors of pediatric ALL – despite the importance of this topic for patients and clinicians.
- However, our analyses suggest a moderately higher risk of being overweight and obese for ALL survivors as they age, in particular for female survivors.
- Need for more standardized and reliable studies that include assessment of:
  - Differential impacts of chemotherapy agents and cranial radiation.
  - Incorporate time since diagnosis and treatment years in the analysis.
- Further research is needed on what aspects (genetics, health eating habits, exercising) contribute to higher BMI among survivors.

Key Findings

- Overall OR=1.12, 95% CI: 1.04-1.19, with survivors more overweight/obese compared to general population.
- For U.S. studies, female survivors are at a higher risk (OR=1.30, 95% CI: 1.19-1.43).

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