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Serum glucose and risk of cancer: a meta-analysis

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Abstract (provisional)

Background

Raised serum glucose has been linked to increased risk of many solid cancers. We performed a meta-analysis to quantify and summarise the evidence for this link.

Methods

Pubmed and Embase were reviewed, using search terms representing serum glucose and cancer. Inclusion and exclusion criteria focused on epidemiological studies with clear definitions of serum glucose levels, cancer type, as well as well-described statistical methods with sufficient data available. We used 6.1 mmol/L as the cut-off for high glucose, consistent with the WHO definition of metabolic syndrome. Random effects analyses were performed to estimate the pooled relative risk (RR).

Results

Nineteen studies were included in the primary analysis, which showed a pooled RR of 1.32 (95% CI: 1.20 - 1.45). Including only those individuals with fasting glucose measurements did not have a large effect on the pooled RR (1.32 (95% CI: 1.11-1.57). A stratified analysis showed a pooled RR of 1.34 (95%CI: 1.02-1.77) for hormonally driven cancer and 1.21 (95% CI: 1.09-1.36) for cancers thought to be driven by Insulin Growth Factor-1.

Conclusion

A positive association between serum glucose and risk of cancer was found. The underlying biological mechanisms remain to be elucidated but our subgroup analyses suggest that the insulin- IGF-1 axis does not fully explain the association. These findings are of public health importance as measures to reduce serum glucose via lifestyle and dietary changes could be implemented in the context of cancer mortality.