

## **1. Malignancy in juvenile idiopathic arthritis.**

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Juvenile idiopathic arthritis (JIA) is a chronic inflammatory disease of the joints that occurs in children under the age of 16. Various different subtypes of JIA exist, such as oligoarthritis, polyarthritis, enthesitis-related arthritis and systemic arthritis. Patients with underlying JIA seem to have an increased risk of developing long-term complications. There are studies in adult rheumatoid arthritis that show an increase in malignancy risk for certain types of cancers, such as lymphomas, in patients with underlying RA. Such results may also be applicable in JIA.

The objective of the study is to investigate the relationship between JIA and malignancy through a systematic review and meta-analysis of cohort studies reporting the risks of malignancy in cohorts of patients with JIA compared to the general population.

A systematic review and synthesis of existing studies relevant to the incidence of cancer in patients who have JIA was performed in order to estimate the relative risk of cancer in these patients versus the general population. This was done by searching for relevant studies in 2 biomedical electronic databases, PubMed and EMBASE, and synthesizing the information via a meta-analysis. PubMed and EMBASE were searched in order to identify any articles and studies of interest. Cohort studies containing data for the observed and expected cases of malignancy were included and cancer rates were extracted in order to generate a pooled standardized incidence ratio that represented the overall risk of cancer in JIA across all studies.

1038 articles were identified for the first screening of the databases. 12 articles were assessed for eligibility after the first screen and 6 articles were included in the final analysis. The pooled standardized incidence ratio (number of observed cases over number of expected cases) of the six identified cohort studies was 1.4 (95% CI 1.1-1.7) which indicates that malignancy risk seems to be increased in patients with underlying JIA. However, it is important to note that current studies have limitations; methodology in terms of JIA and cancer classification varied between studies and may have had an impact on results.

It is unclear if patients with JIA have an elevated risk of malignancy overall. Future studies of JIA and cancer risk are warranted, but adequate methodology and identification criteria are also needed in order to ascertain the true cancer risks in JIA.