INPLASY PROTOCOL

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We declare no competing interests.

A pooled analysis of 5.9 million participants on the association between eczema and cancer risk

Zhu, Y[1]; Yang, L[2]; Teng, Y[3]; Hao, Q[4]; Long, Q[5]; Xu, S[6]; Xu, S[7]; Liu, J[8]; Yu, X[9]; Feng, Z[10]; Yue, Q[11]; Ma, X[12]; Wu, W[13]; Lv, Y[14]; Wang, H[15]; Teng, Z[16]; Tu, Y[17]; Zou, D[18]; Li, X[19]; Zeng, Y[20]; Teng, Z[21].

Review question / Objective: **Does eczema implies a greater risk of cancers?**
Condition being studied: **The occurrence and development of cancer has affected by pathogenic specific factors. Various studies devoted to search for mechanism of tumorigenesis. Recently, the epidemiological relationship between cancer and chronic diseases has gradually been investigated. However, few studies have focused on eczema associated with cancer and their causal relationship was uncertain. The interrelationship between eczema and tumors are both promoting and inhibiting caused by multiple factors containing immune dysregulation, fatigue, and immune surveillance theory, in which immune cells in the chronically overactive immune system may enhance detection and direct the destruction of abnormal precancerous cells, thereby reduced risk of tumor formation. On the contrary, stronger immune system can more thoroughly remove self-antigen cells that exhibit good mutations, leaving more tumor cells that exhibit cross mutations. Moreover, the chronic inflammatory response associated with eczema can cause tissue damage and increase the risk of cancer, Several studies have described a positive correlation between the risk of eczema and T-cell lymphoma. The association of eczema and cancer may vary according to cancer site and the condition of exposure.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 07 September 2020 and was last updated on 07 September 2020 (registration number INPLASY202090029).

INTRODUCTION

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pathogenic specific factors. Various studies devoted to search for mechanism of tumorigenesis. Recently, the epidemiological relationship between cancer and chronic diseases has gradually been investigated. However, few studies have focused on eczema associated with cancer and their causal relationship was uncertain. The interrelationship between eczema and tumors are both promoting and inhibiting caused by multiple factors containing immune dysregulation, fatigue, and immune surveillance theory, in which immune cells in the chronically overactive immune system may enhance detection and direct the destruction of abnormal precancerous cells, thereby reduced risk of tumor formation. On the contrary, stronger immune system can more thoroughly remove self-antigen cells that exhibit good mutations, leaving more tumor cells that exhibit cross mutations. Moreover, the chronic inflammatory response associated with eczema can cause tissue damage and increase the risk of cancer, Several studies have described a positive correlation between the risk of eczema and T-cell lymphoma. The association of eczema and cancer may vary according to cancer site and the condition of exposure.

METHODS

Participant or population: Eczema patients and controls.

Intervention: Eczema.

Comparator: Patients without eczema.

Study designs to be included: "Cohort Studies", "Case-Control Studies".

Eligibility criteria: The inclusion criteria was as follow: all cohort and case-control studies performed on the relation between eczema and cancers, which comprised ORs and 95% CI, comprised two comparator groups in which one group exposure to eczema and the other as control, will be included.

Information sources: PubMed, Embase.

Main outcome(s): Outcomes regarding the association of eczema to skin cancers, blood cancers, brain cancers.

Quality assessment / Risk of bias analysis: NOS.

Strategy of data synthesis: We conducted a meta-analysis to explore the association between eczema and different cancers. We pooled OR and 95% CI reported in the studies. The Cochrane Q and I2 statistics were used to evaluate heterogeneity. When either the P-value was 50%, the data were considered to be heterogeneous, and a random-effects model (i.e., the DerSimonian and Laird method) was applied to estimate the overall effect sizes. Otherwise, when the P-value was >0·1 and the I2 value was <50%, a fixed-effects model was used to estimate the overall effect sizes. Begg's test (rank correlation method), and Egger's test (linear regression method) were used to assess the potential publication bias. STATA software v12.0 (College Station, TX, USA) was used to analyse the data.

Subgroup analysis: To further explore the origin of heterogeneity, we performed subgroup analyses by region, type of study design, and type of cancer.

Sensibility analysis: To assess the stability of our results, sensitivity analyses were conducted by excluding each study in turn, to estimate the influence of each individual study on the pooled results.

Country(ies) involved: UK, USA, Canada, Netherlands, Australia, China, Italian, Sweden, Finland, Sweden, Denmark, France, Belgium, Germany.

Keywords: Eczema and cancer risk.

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