

ASSOCIATION BETWEEN ULCERATIVE COLITIS AND CLIMATIC FACTORS BASED ON COHORT OF NORWAY

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Background and Aims: Incidence of ulcerative colitis has increased during the last decades and the disease also varies between countries. Incidence rates typically increase northwards at the northern hemisphere and southwards at the southern hemisphere. Temporal changes have been explained by the hygiene hypothesis but few parallel explanations exist for the spatial trend. Many factors are linked to latitude such as climate. In our investigation we studied the association between prevalent cases of ulcerative, identified through self-reported medication, and climatic factors such as mean annual temperature, maximal monthly temperature, precipitation, and altitude.

Methods: We used Cohort of Norway, a collection of ten different health studies conducted from 1994 to 2003 and from five different counties in Norway. We used the participants' self-reported use of medication (aminocyclic acids) to identify individuals with ulcerative colitis. We included a sensitivity analysis where we studied the effect of misclassification and measurement error.

Results: Maximal monthly temperature was significantly related to the prevalence of ulcerative colitis. For each one-degree increase in maximal monthly temperature the odds for ulcerative colitis decreased with about 11% (95% CI: 4%-17%). None of the other climatic factors were significantly associated to the risk of ulcerative colitis.

Conclusions: We don't think that maximal temperature is directly related to the risk of ulcerative colitis, but that temperature is related to some unknown mechanism which again is causative for developing the disease. Our speculation is that this mechanism is species richness in organisms that can colonize the human gut. Temperature is one of the main forces governing species richness. Composition and biodiversity of the commensal gut flora is known to be one part in the process leading to ulcerative colitis.