

Psoriasis and Risk Factors for Cardiovascular Disease

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Ingrid Snekvik, dermatologist at St. Olav's Hospital, defended her thesis on June 20, 2018, titled "Psoriasis and cardiovascular disease risk factors. The HUNT Study, Norway" for the degree of PhD at the Norwegian University of Science and Technology in Trondheim. Supervisors: Marit Saunes, Tom Ivar Lund Nilsen and Pål Richard Romundstad. Opponents: Åke Svensson, Malmö, Sweden, Anne-Sofie Furberg, Tromsø and Marianne Wallenius, Trondheim, Norway.

Psoriasis is a common chronic skin disease associated with physical and psychological burden. Chronic inflammation is considered the underlying pathological mechanism, and patients with psoriasis are found to have unfavourable levels of cardiovascular disease risk factors in addition to higher occurrence of cardiovascular diseases, metabolic syndrome and diabetes. Studies have also found that obesity, hypertension and hypercholesterolemia might increase risk of developing psoriasis.

These studies are based on the Nord-Trøndelag Health Study (HUNT Study). We have linked to the National Prescription Database, to assess the severity of psoriasis, and to The Norwegian National Education Database, to obtain information on educational attainment. In a cross-sectional design, we investigated the association of psoriasis, and in particular psoriasis severity, with objectively measured cardiovascular disease risk factors and cardiovascular morbidity (1). Further, we prospectively examined the effect of body mass index (BMI), waist circumference, waist-hip ratio and 10-years weight change on the risk of developing psoriasis (2). Finally, we examined if metabolic syndrome and its components was associated with risk of incident psoriasis (3).

In our cohort, psoriasis patients had increased BMI, waist circumference and C-reactive protein compared to individuals without psoriasis. Psoriasis was also positively associated with diabetes, myocardial infarction, angina pectoris, overweight and metabolic syndrome (1). The prospective studies showed that overweight and obesity were associated with increased risk of psoriasis, where obese individuals had a nearly two-fold higher risk of psoriasis compared to those who were normal weight. Waist circumference and waist-hip ratio were also positively associated with risk of psoriasis. A weight gain of 10 kg or more during the preceding 10 years was associated with a substantially increased risk of psoriasis compared to being weight stable, and there was suggestive evidence that a weight decrease was associated with reduced risk of psoriasis (2). We also found metabolic syndrome to be associated with increased relative risk of incident psoriasis, but this risk diminished when controlling for adiposity. There were weak associations between psoriasis and factors constituting metabolic syndrome except for raised



Fig. 1. Ingrid Snekvik together with the opponents. From left to right: Anne-Sofie Furberg, Ingrid Snekvik, Marianne Wallenius and Åke Svensson.

waist circumference, but we found a dose-response relationship between number of metabolic factors and risk of psoriasis (3).

Our results show that psoriasis is positively associated with measures of adiposity as well as with a clustering of cardiovascular disease risk factors, with the strongest association for moderate/severe psoriasis. Obesity seems to be the strongest risk factor for developing psoriasis in our material, and there is suggestive evidence that weight loss could reduce psoriasis risk. This suggests that preventing weight gain and promoting maintenance of a normal body weight could reduce the incidence of psoriasis.

List of original publications

1. Snekvik I, Nilsen TIL, Romundstad PR, Saunes M. Psoriasis and cardiovascular disease risk factors: the HUNT Study, Norway. *J Eur Acad Dermatol Venereol* 2018; 32: 776–782.
2. Snekvik I, Smith CH, Nilsen TIL, Langan SM, Modalsli EH, Romundstad PR, et al. Obesity, waist circumference, weight change, and risk of incident psoriasis: prospective data from the HUNT study. *J Invest Dermatol* 2017; 137: 2484–2490.
3. Snekvik I, Nilsen TIL, Romundstad PR, Saunes M. Metabolic syndrome and risk of incident psoriasis: prospective data from the HUNT Study, Norway. *Br J Dermatol* 2018 Jun 14. [Epub ahead of print].