

## Incidence, Mortality, Comorbidities, and Treatment of Bullous Pemphigoid in Finland

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Anna-Kaisa Försti, MD, defended her PhD thesis on May 12<sup>th</sup>, 2017 in Department of Dermatology and Venereology, University of Oulu and Oulu University Hospital. Opponent was Docent Sirkku Peltonen, MD, PhD, Department of Dermatology and Venereology, University of Turku and Turku University Hospital and supervisors were Professor Kaisa Tasanen-Määttä, MD, PhD, Department of Dermatology and Venereology, University of Oulu and Oulu University Hospital, and Professor Markku Timonen, MD, PhD, Department of Public Health Science and General Practice, University of Oulu. The thesis book is available at: <http://urn.fi/urn:isbn:9789526215310>.

Bullous pemphigoid (BP) is an autoimmune skin disease predominantly found in elderly people, which causes blistering of the skin and severe itching. The incidence of BP reported by previous studies has varied greatly between 0.05 and 42.8 per 1 million persons per year. Higher incidences have been reported in Western Europe and the USA, while countries around the Mediterranean have reported lower rates. However, the epidemiology of BP has not previously been studied in any Scandinavian country. The one-year mortality of BP is highly variable with estimates between 11% and 41% worldwide. As for comorbidities, the previous studies have shown that BP is associated with neurological disorders.

The aim of this study was to investigate the incidence and mortality of BP in Finland, to assess the treatments used for BP, and the potential contribution of systemic glucocorticoid treatment to the high mortality rate found in BP patients. A further aim was to obtain more specific information about the neurological diseases associated with BP, and to clarify the less studied association with psychiatric disorders. For these purposes, we collected the records of all immunologically confirmed BP patients diagnosed in the Oulu University Hospital between 1985 and 2012, and, for the sub-study III, data for all patients diagnosed with BP in Finnish hospitals between 1987 and 2013.

We found that the incidence of BP in Northern Finland has increased over the past two decades to approximately 27 new BP cases per 1 million persons per year. The one-year mortality of BP patients is 17%, and the standardized mortality ratio is 7.6. Common comorbidities found in the sample of BP patients were: cardiovascular diseases (76%), neurodegenerative diseases (41%), skin conditions other than BP (37%) and type 2 diabetes (23%). Many neurodegenerative diseases of the central nervous system were associated with BP, as were many psychiatric disorders. The association was strongest between multiple sclerosis (MS) and BP, with MS patients having almost a 6-fold higher risk of BP than controls.



Anna-Kaisa Försti (second from the right), defended her PhD thesis on May 12<sup>th</sup>, 2017. Opponent was Docent Sirkku Peltonen (left) and Professors Kaisa Tasanen-Määttä and Markku Timonen served as Supervisors.

This study reports for the first time the incidence and mortality of BP in Finland, and provides new information about the association between BP and neurological and psychiatric disorders.

### List of original publications

- I. Försti A-K, Jokelainen J, Timonen M, Tasanen K. Increasing incidence of bullous pemphigoid in Northern Finland: a retrospective database study in Oulu University Hospital. *Br J Dermatol* 2014; 171: 1223–1226.
- II. Försti A-K, Jokelainen J, Timonen M, Tasanen K. Risk of death in bullous pemphigoid: a retrospective database study in Finland. *Acta Derm Venereol* 2016; 96: 758–761.
- III. Försti AK, Jokelainen J, Ansakorpi H, Seppänen A, Majamaa K, Timonen M, Tasanen K. Psychiatric and neurological disorders are associated with bullous pemphigoid – a nationwide Finnish Care Register study. *Sci Rep* 2016; 6: 37125.