

## **New research on Sjögren's syndrome underway**

Since the early 1990s, research into Sjögren's syndrome has been central to the Department of Rheumatology, Haukeland University Hospital and Broegelmann's research laboratory, University of Bergen (UiB). Good collaboration and a high degree of participation from the patients, often over several years, have been crucial to being able to study different aspects of the disease, and to link the research to the patients' symptoms and signs of the disease. Through a European collaboration, patients in Western Norway will have the opportunity over the next few years to participate in the trial of a completely new treatment for Sjögren's syndrome.

It is still a challenge to diagnose Sjögren's syndrome, especially at an early stage. Several clinical signs appear quite late in the course of the disease, and much knowledge is focused on fully developed disease and chronic inflammation. The Sjögren's research in Bergen began with us looking for causes of the chronic inflammation, by examining blood samples for signs of previous herpes infection. To map early stages in the development of the disease, we also use animal models.

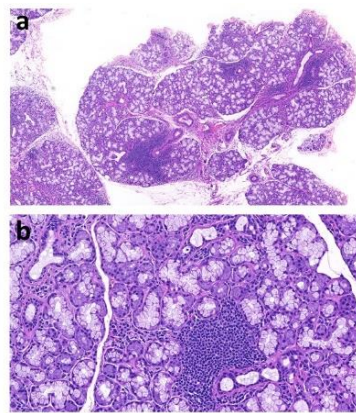
In order to understand how the disease occurs, we have also worked towards finding hereditary factors (genetic markers). Genetic studies are resource-intensive, and for several years we have been part of a large, international collaboration. Together with researchers from Oklahoma, USA, 10 years ago we were able to present the first genetic markers (12 candidate genes) for Sjögren's syndrome, and recently another 10 candidate genes.

In collaboration with researchers in Sweden, we were able to show that typical antibodies can be detected in blood samples long before both symptoms appear and a diagnosis is established, a very important and interesting discovery. The discovery was possible thanks to a serum biobank with samples from 625,000 women, including 29 Sjögren's patients. We have also shown that patients who have antibodies typical of Sjögren's seem to have a different disease picture compared to patients who do not have typical antibodies. We were the first in the world to describe that an important signaling substance (interferon) that usually targets viruses is an important marker for active disease in Sjögren's patients.

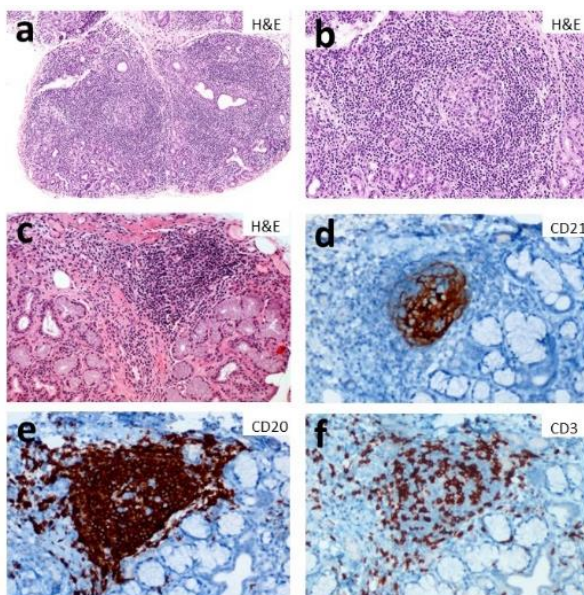


In the laboratory, we have investigated how certain immune cells, so-called dendritic cells, can be influenced to have an inhibitory effect on sick blood cells. This could be a possible new treatment method for Sjögren's syndrome.

Many of our studies have involved analyzes of salivary gland biopsies, which are important both for making the diagnosis of Sjögren's syndrome and for classifying the patients. Pronounced inflammation in the salivary glands has been shown to be associated with a more active type of disease.



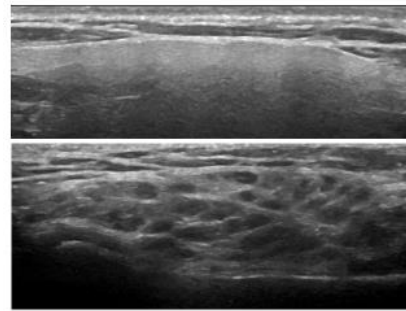
The first study that described the local formation of auto-antibodies in the salivary glands was carried out in Bergen. Later, we examined fatty tissue in the salivary glands and showed that this can affect the local inflammation.



In approximately a quarter of all patients with Sjögren's syndrome, an organization of inflammatory cells can be seen in the salivary glands. When we linked this to a specific subgroup of Sjögren's patients, we found a connection with an increased risk of lymph cancer, one of the more serious consequences of Sjögren's syndrome. These patients are now followed up with more frequent checks in the clinic to

detect lymphoma as early as possible and begin appropriate treatment.

In collaboration with groups in France, Sweden and Italy, we have explored salivary gland ultrasound. The imaging technique is now used in the clinic as an aid in diagnostics, and to follow inflammatory changes in the salivary glands over time, without taking a new tissue sample.



University of Bergen

Over the past 30 years, we have made important discoveries using blood, saliva and tissue from our patients. This has inspired us to follow the patients over several years, including with salivary gland ultrasound. We have extensive cooperation in Norway, in Scandinavia, in Europe and elsewhere in the world, especially in the USA. Together, we have made many important discoveries, which will be important for future, targeted treatment of the disease.

Our research has received funding from Broegelmann's Legat, Helse Vest, the Research Council of Norway, the European Union (EU), Trond Mohn, and other contributors. In 2015, the Sjögren's community in Bergen organized the international Sjögren's congress, with approx. 300 Sjögren's researchers from all over the world.

Thank you to all of you who, by participating in our research projects, have contributed to new knowledge about Sjögren's syndrome!