

## ONE HUNDRED YEARS OF SARCOIDOSIS RESEARCH IN FINLAND (1916-2017)

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Member of the International committee on sarcoidosis 1981-1987, Member of the Executive Committee of WASOG (World Organisation of Sarcoidosis and Other Granulomatous Disorders) 1987-2002, Member of the Editorial Board of Sarcoidosis/Sarcoidosis, Vasculitis and Diffuse Lung Diseases 1987-2002, President of the Scandinavian Sarcoidosis Association 1992-2002, President of the 7th WASOG congress in 2002.

Sarcoidosis is a peculiar disease. The clinical phenotypes are varying and most organs in the body may be affected. However, the lungs and hilar/mediastinal lymphnodes are involved in more than 90% of all patients. Therefore lung physicians see many patients with suspected sarcoidosis but representatives of almost all clinical specialities will be involved. The course of disease is also varying from the acute type with fever, bilateral hilar lymphadenopathy, arthralgia and erythema nodosum, and favopurable prognosis, to the chronic progressive forms with less good outcome. Nevertheless, mortality due to sarcoidosis is low. A reason why research on sarcoidosis is of interest, too, is the fact that the aetiology is still unknown. May be there are several aetiologies depending on geographical locations and genotypes.

Sarcoidosis research in Finland has a reasonably long history. The first publication related to what we today call sarcoidosis was by the ophthalmologist Elis Kuhlefeldt in 1916 ("A case of subchronic uveoparotid inflammation, Heerfordt"), published in Swedish in *Finska Läkaresällskapets Handlingar*. The manuscript was translated to English and published in *British Journal of Ophthalmology* in 1917.

The next person in Finland to pay attention to sarcoidosis was Axel Cedercreutz at the Department of Dermatology in Helsinki. From the early 1930'ies he had seen patients with sarcoid skin lesions. At the Nordic dermatology congress in Helsinki in 1938 he presented four cases of Boeck's sarcoid. All four pa-

tients had skin lesions on the face and two of them had changes in the hilar regions in chest radiographs.

The "father of sarcoidosis" in Finland, professor Tauno Putkonen (1900-1976), was head of the Department of Dermatology at Helsinki University 1952-1967. Putkonen's great interest was in the Kveim test, although he had a general interest in sarcoidosis.

At the third international congress on sarcoidosis in Stockholm in 1963, Finland had four participants in addition to Putkonen. They were the professor of pathology in Turku/Åbo, Osmo Järvi, the professor of pulmonary medicine in Helsinki/Helsingfors, Jorma Pätiälä, and professor Nils Riska, Head of the Meltola/Mjölbolsta hospital in Karjaa/Karis, and the at this time point, the 26 years old author of this monograph. At a congress lunch Putkonen suggested that the four seniors present should supervise an academic thesis each, related to sarcoidosis. As a result of this commitment the monographs of Kari Määttä (supervisor Järvi), Olof Selroos (Riska), Matti Hannuksela (Putkonen) and Pentti Tukiainen (Pätiälä) were developed and defended as academic dissertations.

Since then sarcoidosis research in Finland has been concentrated to a few centres. The first centre was the Department of Dermatology at the Helsinki University Central Hospital with Putkonen, Hannuksela, Kimmo Mustakallio, Maija Horsmanheimo

and others. A second centre was built at the Meltola/Mjölbolsta hospital with Nils Riska, Selroos, Markus Niemistö, Carola Grönhagen-Riska, Henrik Riska, Seppo Sutinen and Anne Pietinalho. The clinical chemistry laboratory of this hospital (particularly Bertil Fröseth, Anna-Maija Teppo and Linnea Linko) actively participated in sarcoidosis research by developing and making several new assays available. A third centre was the Department of Pulmonary Medicine at the Helsinki University Central Hospital with Pätiälä, Tukiainen and Hilikka Tiitinen.

In 1966 Selroos moved from Meltola/Mjölbolsta to the IV<sup>th</sup> Department of Internal Medicine at the Helsinki University Central Hospital but continued to collaborate with colleagues at the Meltola hospital, developed collaboration with Tukiainen and Tiitinen at the Department of Pulmonary Medicine. He also initiated new collaborations with e.g. Matti Klockars (lysozyme works), Frej Fyhrquist, Grönhagen-Riska and other researchers at the Minerva Institute of Medical Research (angiotensin converting enzyme).

Maija Horsmanheimo got her speciality in dermatology at Putkonen's department but did her research related to delayed type hypersensitivity together with Martti Virolainen at the Third Department of Pathology of the Helsinki University. Vuokko Kinnula headed a research group at the Oulu University and focused on granuloma and fibrosis research. Anni Karma published on ocular sarcoidosis

and Virpi Oksanen became a well-known expert of neurological aspects of the disease.

Selroos and Pietinalho conducted clinical trials with inhaled budesonide. Pietinalho got access to a Japanese material from Hokkaido and compared sarcoidosis in the two countries. Selroos and Pietinalho also initiated genetic research together with Marja-Liisa Lokki, Biomedicum, former Haartman institute, of Helsinki University. More recently advanced research on cardiac sarcoidosis has been initiated at the Department of Medicine, Cardiology Division, Helsinki University Central Hospital – head Markku Kupari.

In the following all clinical publications by Finnish authors related to sarcoidosis are summarized. A few preclinical papers have been included as they have direct impact on clinical issues. In some cases abstracts have been included. The presentation begins with a list of academic dissertations defended at Finnish universities. At the end a list of preclinical publications is added (read by title) as well as a list of reviews, editorials and book chapters. Finally, the contributions by Finnish colleagues at international conferences on sarcoidosis are added. I hope this review will be helpful in further sarcoidosis research. I apologize for any missed contributions.

*Helsinki/Helsingfors, April 2018*