

Editorial

Niels R. Finsen: First Nobel Laureate in Medicine

Niels Ryberg Finsen (1860–1904) (Fig. 1) is the father of light therapy. In 1903 he was honoured with the first Nobel Prize in medicine or physiology for his successful studies on reactions of normal and diseased skin to light, and the introduction of light as an effective treatment of lupus vulgaris - a common and disfiguring affection of the face, which had previously been widely resistant to existing therapy. Tragically Niels Finsen was severely weakened by his chronic congestive disease, and had to be given the prize in his home in Copenhagen. Shortly thereafter, in 1904, he passed away.

Niels Finsen's initial studies were published in Danish in 1893, in a local journal named *Hospitalstidende* (1, 2). He used his own arm for the



Fig.1 Niels Ryberg Finsen

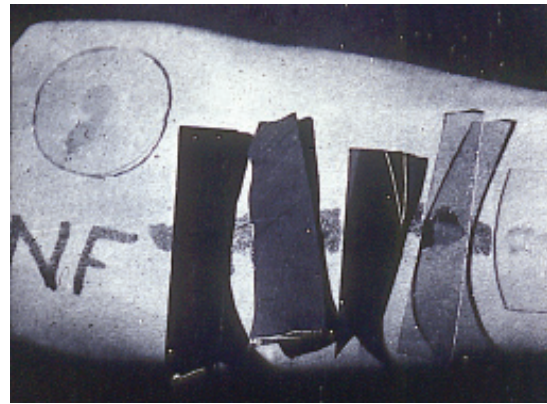


Fig. 2. Initial experiments by Niels Finsen on skin reaction to light filtered by stained glass. His own arm was used for the experiment.

study of reactions elicited by light filtered through different pieces of stained glass (Fig. 2). His studies were not sophisticated in the modern sense but clear and conclusive. Demonstration of efficacy in lupus vulgaris was revolutionary, and within a remarkably short period of time Finsen clinics were established in many other countries. Finsen summarised his experiments in the first issue of "Meddelelser fra Finsens Medicinske Lysinstitut" (3) ("Notices from Finsen's Medical Light Institute").

The Copenhagen Finsen Institute with the official name "Finsens Medicinske Lysinstitut" ("Finsen's Medical Light Institute") was founded in April 1896, and in full operation in 1898, thanks to private and national grants (Fig. 3). The purpose of the institute was research oriented (§1: "at anstille og fremme Undersøgelser over Lysets virkning paa de levende Organismer, hovedsageligt med det Formal for Øje, at anvende

Lysstraaler i den Praktiske Medicins Tjeneste"). ("to perform and promote investigations of the effect of light on living organisms, mainly with the aim to use rays of light in the service of practical medicine") Finsen's concept relied on direct effect of selected bands of the light spectrum on skin and disease, and he did much experimentation to optimise the light source and avoid heat and burn reactions.

At that time, lupus vulgaris (at least cases where the mycobactirum was identified in the tissue) was known to be caused by direct inoculation of *Mycobacterium Tuberculosis* into the skin, with granulomas, tubercles and other reactive tissue alterations dominating the clinical picture. Robert Koch (1843–1910) had already described the mycobacterial etiology of tuberculosis in 1882 and the French school had earlier postulated that lupus vulgaris was a late manifestation of congenital syphilis, i.e. originated in utero. It was not until



Fig. 3. The Finsen Institute in Copenhagen

1905, when Fritz Schaudinn (1871-1906) described the *Spirochaeta Pallida*, that syphilis infection could be clearly delineated on ethiologic grounds. Today the term tuberculous chancre is still used for another form of cutaneous tuberculosis caused by direct inoculation.

In 1905, the father of Danish Dermatology, Professor Carl Rasch (1861-1938), wrote in the first edition of his dermatology textbook: "the treatment introduced in 1896 by Niels R. Finsen with concentrated chemical light is with no doubt the best treatment of most cases", and later "... a major irritation is elicited on the treated site; due to this and maybe also due to a direct harmful effect on the tuberculosis bacteria the disease is healed after more or less treatments" (4). The light treatment was mainly seen as a new irritant or abrasive treatment with better efficacy and fewer side effects, including a much better cosmetic outcome. Unna's creosote-salicylic plaster was

maintained as an alternative. Previous therapies included surgery, excision, scraping, scarification etc. and aggressive corrosives such as strong acids, kali causticum, pasta caustica Viennensis (strongly alkaline) and lapis infernalis (5). Professor Rasch highlighted that the Finsen treatment was more effective, more profound in effect in the skin, cosmetically better, but more expensive.

Lupus vulgaris was a common disease at the turn of the century, of massive social consequence for the afflicted individuals. Two epidemiological studies from England found a prevalence of cutaneous tuberculosis of 2 and 4% (6), and Rasch stated that lupus was even more frequent in Denmark (5). The disease predominated in colder climates. As prevalence was at the magnitude of order of psoriasis, with the disfiguring manifestations taken into account, it is easy to understand that the Finsen treatment was received with gratitude and admiration by his contemporaries.

Radiation physics and light made good progress and helped each other. Wilhelm Conrad Röntgen (1845-1932) described the X-rays in 1896 (he also started with case observation; the first published picture showed his wife's hand with bones and wedding ring!). Röntgen had alter-



Fig. 4. The Finsen monument, initially located in front of his institute, now placed in front of the building of the previous Department of Dermatology H, Rigshospitalet. In this position Finsen is facing the Finsen Center of oncology and radiation therapy.

ready received the Nobel Prize in physics in 1901. This was the first time it was awarded, though it was formally instituted in 1895. The understanding of radiation rapidly rendered not only diagnostic uses possible, but also enabled development of radiotherapy of internal cancers. In dermatology, Röntgen's X-rays soon became popular as therapy for various indications including permanent depilation, eczema and warts! After some time, the usage became more sparing, and dermatological X-rays and "grenz rays" found their fields of indication.

Development over a century brought use of radiation such as Finsen light and X-ray far beyond what the initial experiments justified. The early experiments, and the happy coincidence of time alongside tremendous technical development, made use of radiation one of the most prominent achievements in medicine ever - and it all started with simple experiments by Finsen and by Röntgen.

Niels Finsen, who was born on the Faeroe Islands and as an adolescent sent to Denmark for education, received the following teacher's evaluation at the Herlufsholm upper school: "Niels Finsen er en hjetensgod Dreng, men Evnerne er Smaa, og det mangler Ham ganske paa Energi". ("Niels Finsen is a good boy, but his possibilities are small, and he is quite lacking in energy.")

A centenary symposium on light and skin will take place in Copenhagen at Bispebjerg Hospital from November 27th-29th. Finsen's Institute in Copenhagen was closed in 1987 but his research field was continued at Bispebjerg Hospital, the photobiology laboratory. A "Finsen Center" with a radiotherapy unit was opened at the Rigshospital. Niels Finsen will not be forgotten despite changing times, new therapies and all the challenges in research.

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