

# Dissertations

## Hidradenitis Suppurativa, with Special Reference to Carbon Dioxide Laser Surgery

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Hidradenitis suppurativa (HS) is a chronic inflammatory disease with recurrent abscesses. In most cases, it involves the axillar and anogenital regions. In industrialised countries, the prevalence is of 0.3% to 4%, and the disease is over-represented in young adult females. Various medical treatments have been used but they are seldom effective. Surgical treatment is recommended as soon as the condition is diagnosed, but wide excisions very well outside the clinical borders of activity, are mandatory. A simple local incision is of no value.

According to Hurley's clinical classification, stage I consists of one or more abscesses with no sinus tract and cicatrisation and stage II consists of one or more widely separated recurrent abscesses, with a tract and cicatrisation. The severest cases (stage III) have multiple interconnected tracts and abscesses throughout an entire area.

We describe a method using horizontal vapourisation with carbon dioxide laser in a controlled manner, radically but selectively. This is a tissue-spar-



Jan Lapins (*middle-right*) defended his thesis on Maj 4<sup>th</sup>, 2001, at Huddinge University Hospital, Department of Dermatology. Faculty Opponent was Gregor Jemec, Department of Dermatology, Roskilde University Hospital (*right*), and Chairman was Lennart Emtestam (*middle-left*). Peter Lidbrink, Head of the Department is shown left.

ing technique that removes the inflamed foreign body-like tissues of HS, including its squamous epithelium-lined and keratin-containing sinuses. The use of carbon dioxide laser in a continuous mode gives rapid and even ablation, and the HS macro-pathology can be seen during surgery. We left the wounds to heal by secondary intention which took a mean time of 4 weeks. At first, we used a free hand and more surgeon-dependent method. We then switched to an optomechanical scanner system-assisted technique providing better accuracy, safety and faster ablation. Our results in 58 patients, with a low frequency of local recurrences, show that this method is suitable for HS cases stage II, according to Hurley's classification. We also find it to be safe, fast and inexpensive, with satisfactory cosmetic and functional results suitable for outpatients. It permits early and simple treatment of HS lesions that were previously perhaps dealt with less effective local conservative

remedies.

The association between HS and the risk of non-melanoma skin cancer has been suggested in several case reports. To investigate this association and the risk of other malignancies, we performed a population-based retrospective cohort study, including 2 119 HS patients selected from a computerised database of hospital discharge diagnoses in Sweden during 1965–1997. We found a 4.6-fold increase in non-melanoma skin cancer 1–32 years after the diagnosis was made. Although it is not clear why HS predisposes to skin cancer, most authors believe that chronic irritation and infections that lead to proliferative epidermal changes, including cancer.

Our study is the first to investigate other cancer risks in a relatively large group of HS patients over three decades. We found increases in buccal

and primary liver cancer. No information is available about alcoholism in our cohort and, to our knowledge, no such studies exist, but the increased incidence of both types of cancer may be an indication of excessive drinking among HS patients. According to epidemiological data, cigarette smoking seems to be involved in many skin diseases. Likewise, we know little about the smoking habits of our patients, but in a questionnaire study on 63 HS patients, 89% were smokers vs. 46% in a matched-pair control group. Similar results regarding smoking habits and HS were found in a recent retrospective study. Therefore, substantial confounding by smoking cannot be ruled out, since the risks of lung cancer (SIR 1.7; 95% CI, 0.6-4.1) and mortality from it (SMR 1.7; 95% CI, 0.5-3.9) were increased.

In the course of HS, bacterial involvement is sometimes considered intermittent or absent, depending on the results of the bacteriological studies. The pathogenic role of bacteria in HS is therefore under debate. We used a carbon dioxide laser surgical method, which had the advantage of heat sterilisation and took bacteriological cultures from one superficial and two deep levels during the surgical procedure. All but three of the 25 cases were positive in one or both of the deep cultures. The most commonly isolated bacteria were coagulase negative staphylococci (CNS), which were found in  $\pm 64\%$  of the deep bacterial cultures, and staphylococcus aureus, in 24%. The frequency of CNS in the deeper parts of HS suggests that they are of pathogenic significance. The presumably destructive properties of

this otherwise harmless member of the skin's commensal flora may be secondary to mechanisms like those in the foreign-body situation.

The distribution of HLA class I alleles in patients with HS was determined previous in a study by O'Loughlin et al., where seven of 27 patients with moderate or severe clinical disease had increased frequencies of HLA antigens A1 and B8, but the differences were not significant due to the small number of cases. In this study of 42 Swedish patients with HS, the distributions of the HLA-A, -B and -DRB1 alleles were determined with PCR-based tissue typing and no HLA association was found. It is the first study using highly accurate and high-resolution genomic tissue-typing techniques in patients with HS. Therefore the notion that specific HLA antigens may confer genetic susceptibility to HS was not confirmed and remains questionable.

To our knowledge, only one study has been done on the host-response in HS. The percentage of engulfed bacteria opsonized with autologous serum and plasma immunoglobulins were measured and no differences between patients and healthy controls were found. In our study on neutrophilic functions, we saw an increasing radical generation in HS patients after PMA-stimulation. The sensitivity may be constitutional and associated with the disease, but its pathological relevance is not clear. Our interpretation of the findings has at least two limitations. First, the small number of cases in this pilot study makes the

statistical estimates very sensitive to effects of chance. In general, no significant differences were found in the membrane expression of the receptor molecules, but all of them had an obvious tendency to be more up-regulated in the patients, which may indicate that the cells are more activated. Dysfunctional neutrophils may be involved in the pathogenesis of HS, but the findings should be interpreted with caution because of the small number of cases observed.

### List of original publications

The thesis is based upon the following original papers.

- I. Lapins J, Marcusson JA, Emtestam L. Surgical treatment of chronic hidradenitis suppurativa: CO<sub>2</sub> laser stripping-second intention technique. *Br J Dermatol* 1994; 131: 551-556.
- II. Lapins J, Ye W, Nyrén O, Emtestam L. Incidence of cancer among patients with hidradenitis suppurativa. *Arch Dermatol* 2001; 137: 730-734.
- III. Lapins J, Olerup O, Emtestam L. No HLA-A, HLA-B or HLA-DR association in Swedish patients with hidradenitis suppurativa. *Acta Derm Venereol* 2001; 81: 28-30.
- IV. Lapins J, Jarstrand C, Emtestam L. Coagulase-negative staphylococci are the most common bacteria found in cultures from the deep portions of hidradenitis suppurativa lesions, as obtained by carbon dioxide laser surgery. *Br J Dermatol* 1999; 140: 90-95.
- V. Lapins J, Åsman B, Gustafsson A, Bergström K, Emtestam L. Neutrophil-related host response in hidradenitis suppurativa - a pilot study in patients with inactive disease. *Acta Derm Venereol* 2001; 81: 96-99.
- VI. Lapins J, Sartorius K, Emtestam L. Modified minimal invasive carbon dioxide laser surgery - a retrospective study of patients with hidradenitis suppurativa. In manuscript.