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# The prevalence of hidradenitis suppurativa and its potential precursor lesions

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**Background:** The morbidity of hidradenitis suppurativa can be considerable, but little is known about its epidemiology.

**Objective:** Our purpose was to describe the 1-year and point prevalences of hidradenitis suppurativa and its potential precursor lesions.

**Methods:** We obtained the histories and examined an unselected sample (599 persons) of the general population (1-year prevalence), and we performed physical examinations for a consecutive sample of 507 persons undergoing screening for sexually transmitted diseases (point prevalence).

**Results:** The point prevalence was 4.1% (95% confidence interval [CI] = 3.0 – 6.0) on the basis of objective findings. The 1-year prevalence of hidradenitis was 1.0% (CI = 0.4 – 2.2) on the basis of subject recollection only. The patients in the sample on which point prevalence is based were younger than those in the unselected sample of the general population ( $p < 0.001$ ). Hidradenitis was significantly more common in women ( $p = 0.037$ ), which may result from a female preponderance of genitofemoral lesions (odds ratio [OR] = 5.4; CI = 1.5 – 19.3). No sex difference was found in the prevalence of axillary lesions.

**Conclusion:** Hidradenitis suppurativa is significantly more common than hitherto estimated. The female preponderance of patients is confirmed, except for patients with axillary lesions. Additional longitudinal studies are necessary to assess the importance of potential precursor lesions such as noninflamed nodules or comedones.

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Hidradenitis suppurativa is a clinically defined disease. The main signs are recurrent inflamed nodules in the axillae or genitofemoral region. The nodules are often painful and are subject to chronic or recurrent suppuration.<sup>1,2</sup>

Little is known about the epidemiology of hidradenitis, and existing data are mostly based on estimates or examination of small series of patients.<sup>2-4</sup> The purpose of this study was to determine the 1-year prevalence in a Danish population and the point prevalence of hidradenitis in consecutive patients undergoing screening for sexually transmitted diseases (STDs).

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## MATERIAL AND METHODS

We define hidradenitis as recurrent painful suppurative or inflammatory lesions in the axillae or in the groin. Patients who had “furuncles” elsewhere were not included so as to exclude staphylococcal infection.

Two groups were studied independently. The 1-year prevalence of the disease was studied in the population living in the western part of Copenhagen County. The population was recently found to be representative of the total Danish population with regard to sex and age distribution and marital status.<sup>5</sup> A random sample of 8000 men and women 15 to 69 years of age living in this area participated in a postal survey about respiratory symptoms and 6998 (87.5%) responded.<sup>6</sup> Irrespective of their answers, a random sample of 793 subjects was invited for a general health examination by a standard letter.<sup>6</sup> The subjects were asked “Have you had painful boils in the armpit or the groin during the past 12 months?” If the answer was “yes,” the subject was asked “Could you empty the boil by pressing it like a

**Table I.** Age and sex distribution of the three samples studied

	1-Year Prevalence Sample	Point prevalence sample	Patient sample
No. of male subjects	298	276	6
Mean age (yr) $\pm$ SD	42.1 $\pm$ 14.8	28.4 $\pm$ 8.2	37 $\pm$ 11
No. of female subjects	301	231	24
Mean age $\pm$ SD	39.3 $\pm$ 14.1	25.9 $\pm$ 7.2	35 $\pm$ 11
Total subjects	599	507	30

pimple?" If the answer was "no," the subject was thought to have hidradenitis and the presence of any lesions was noted. Demographic data from the persons identified in this manner were compared with data obtained from 30 patients referred for treatment of hidradenitis to identify possible major discrepancies between the two groups.

The point prevalence was studied among consecutive patients attending an STD clinic. The clinic has approximately 9000 new patients a year. For two 6-month periods (September 1992–March 1993 and September 1994–March 1995) the presence or absence of nodules or inflamed lesions compatible with the diagnosis of hidradenitis in all new patients seen by us was noted. In addition, the presence of noninflamed nodular lesions and comedones in the axillae and groin was noted.

Prevalence rates and 95% CIs were calculated on the basis of a binomial distribution. Comparison between groups was analyzed by means of the chi-square test with corrections or the Student *t* test where appropriate. Data in  $2 \times 2$  tables were analyzed with Fisher's exact test. ORs and 95% CIs were calculated to assess differences.

## RESULTS

Of the 793 persons from the unselected general population sample who were invited to participate, 599 (75.5%) had a general examination. Information about hidradenitis was obtained from 585 (97.5%). The age and sex distribution of the persons examined is shown in Table I. Six persons (three men, three women) had a history compatible with a diagnosis of hidradenitis, which suggested a 1-year prevalence of 6 of 585 (1.0%) and a 95% CI of 0.4–2.2. None of the examined persons, however, had any signs of scarring or active lesions. The mean age and standard deviation (SD) of the three men was 39.0 years (SD = 13.0), whereas the women had a mean age of 28.7 years (SD = 7.8). These differences were not statistically significant. None of these six persons

had diabetes. Comparison of basic demographic data on the unselected population samples and the patients with an established diagnosis of hidradenitis suppurativa suggested no difference in marital status or level of education.

In the group of patients undergoing screening for STDs, a total of 507 persons (276 men, 231 women) were examined. The age distribution is shown in Table I. A total of 20 persons (6 men, 14 women) had clinical signs of hidradenitis; the type and location of the lesions are shown in Table II. The point prevalence of hidradenitis in this group was 20 of 507 (4.1%) (CI = 3–6). The prevalence of inflamed and noninflamed nodular lesions and comedones is shown in Table II. The mean age of the men was 31.7 years (SD = 9.8) and of the women 26.4 years (SD = 8.0). The patients with hidradenitis identified in this group were more homogeneous and younger than in the population sample, but the difference was not significant and the SD of the age in the two groups was not different.

Hidradenitis in general was significantly more common in women than in men ( $p = 0.037$ ; OR = 2.9; CI = 1.1–7.7). The difference appears to result from the larger prevalence of the genitofemoral lesions in women ( $p = 0.004$ ; OR = 5.4; CI = 1.5–19.3). No sex difference was seen in the prevalence of active axillary hidradenitis. Noninflamed nodules showed a similar picture of general ( $p = 0.004$ ; OR = 5.4; CI = 1.1–7.7) and genitofemoral ( $p = 0.014$ ; OR = 4.6; CI = 1.3–16.5) female preponderance. Comedones were not found to be significantly associated with sex or area of the body. Eleven subjects had multiple changes: axillary and genitofemoral hidradenitis as well as axillary noninflamed nodules (one subject), concomitant axillary hidradenitis and genitofemoral noninflamed nodules (one), genitofemoral hidradenitis and comedones (one), genitofemoral hidradenitis and nodules (two), genitofemoral hidradenitis and axillary noninflamed nodules (two), genitofemoral noninflamed nodules

**Table II.** Prevalence data for hidradenitis and presumed precursor lesions in a random sample of patients attending the STD clinic\*

	Male	Female
No. of persons examined	276	231
Active axillary hidradenitis	3 (1.1%; 0.0-3.0)	2 (0.9%; 0.0-3.0)
Active genitofemoral hidradenitis	3 (1.1%; 0.0-3.0)	13 (5.6%; 3.0-9.0)
Noninflamed axillary nodules	3 (1.1%; 0.0-3.0)	3 (1.3%; 0.0-4.0)
Noninflamed genitofemoral nodules	3 (1.1%; 0.0-3.0)	11 (4.8%; 2.0-8.0)
Axillary comedones	3 (1.1%; 0.0-3.0)	2 (0.9%; 0.0-3.0)
Genitofemoral comedones	4 (1.5%; 0.0-4.0)	5 (2.2%; 1.0-5.0)

\*A total of 11 persons had multiple findings. Noninflamed nodules were defined as palpable dermal/subcutaneous freely mobile nodules without any clinical signs of inflammation and clinically compatible with noninflamed hidradenitis lesions. Data in parentheses are percentage of total and 95% confidence intervals.

and axillary comedones (two), and genitofemoral nodules and comedones (two). Analysis showed that active hidradenitis and the noninflamed nodules in women may be mutually exclusive ( $p = 0.0213$ ; OR = 0.12; CI = 0.02 – 0.68) and showed a similar effect between comedones and active hidradenitis in men ( $p = 0.0278$ ; OR = 0.04; CI = 0.00 – 0.97). No significant age differences were found when patients with only comedones were compared with patients with active hidradenitis or noninflamed nodules.

## DISCUSSION

The study shows that hidradenitis is considerably more common than previously estimated, with a point prevalence of 4.1% in a younger adult population. The 1-year prevalence of 1% in the unselected population was based on the subjects' recollection only and may therefore represent several other diagnoses. In an adult population the rate is similar to those of other major dermatoses (e.g., psoriasis).<sup>7</sup> Previous studies have estimated the prevalence at 1 of 3000<sup>4</sup> without specifying a time frame. Physical examinations of unselected dermatologic patients have found point prevalence rates of 1 of 1000,<sup>3</sup> whereas interviews of healthy women with a mean age of 31 years found a 4% lifetime prevalence rate<sup>2</sup>; these appear to be in good accordance with the present observations. The wide differences observed may be due either to the different age groups examined or to differences in diagnostic specificity. Hidradenitis appears to be more common in younger adults, and previous studies that contained a higher number of older adults may therefore have underestimated the prevalence.<sup>8</sup> The higher than expected prevalence suggests that a considerable number of patients with hidradenitis suppurativa are either be-

ing treated by nondermatologists or are not receiving treatment at all.

Specificity is always a problem in the study of diseases for which no pathognomonic tests exist. The chronic or recurrent nature of localized lesions of inverse regions (e.g., axillae), especially in the absence of lesions elsewhere, is highly indicative but not pathognomonic. The questions in the screening questionnaire were directly derived from the clinical definition of hidradenitis. The age and sex of patients with possible hidradenitis identified in the general population samples were not significantly different from the patients undergoing treatment of hidradenitis, but minor differences were found. There were fewer women in the general population sample than among the patients, and the women with hidradenitis found in the STD clinic sample were younger than those undergoing treatment. Only marginal socioeconomic differences were found. Patients were more likely to be unmarried, better educated, and slightly older women than the population sample. Similar socioeconomic differences can be found in other diseases in which population data are compared with hospital data and may reflect referral patterns within the health system rather than true biologic differences between the groups.

The study confirms that active hidradenitis is generally more prevalent in women, although more detailed analysis reveals other details. Active genitofemoral lesions were significantly more common in women, whereas no sex difference was seen in the less frequent axillary lesions. Potential precursor lesions such as noninflamed nodules and comedones showed a mixed picture.<sup>9</sup> Noninflamed quiescent nodules were more prevalent in women and in genitofemoral lesions, whereas comedones were equally

distributed in both sexes and sites. These differences may occur because of age differences or because the patients with STDs do not constitute a representative sample of the community; they may also reflect the evolution of hidradenitis lesions. We found a significant negative association between the presence of active hidradenitis and the presence of noninflamed nodules in women, which suggests either a different pathogenesis or a mutual exclusion as would be expected if nodules progress into inflamed lesions. A similar association was found between comedones and active hidradenitis in men.

The findings may also reflect an underlying heterogeneity suggestive of different subtypes of the disease. A significant pathogenetic heterogeneity of the disease would help explain the often highly variable results of medical treatment.

#### REFERENCES

1. Hurley HJ. Axillary hyperhidrosis, apocrine bromhidrosis, hidradenitis suppurativa, and familial benign pemphigus: surgical approach. In: Roenigk RK, Roenigk HH, editors. *Dermatologic surgery*. New York: Marcel Dekker, 1989: 717-45.
2. Jemec GBE. The symptomatology of hidradenitis suppurativa in women. *Br J Dermatol* 1988;119:345-50.
3. Lookingbill DP. Yield from a complete skin examination. *J Am Acad Dermatol* 1988;18:31-7.
4. Fitzsimmons JS, Guilbert PR. A family study of hidradenitis suppurativa. *J Med Genet* 1985;22:367-73.
5. Rasmussen BK, Jensen R, Schroll M, et al. Epidemiology of headache in a general population—a prevalence study. *J Clin Epidemiol* 1991;44:1147-57.
6. Nielsen NH, Dirksen A, Madsen F. Can subjects with a positive allergen skin test be selected by a short questionnaire? *Allergy* 1993;48:319-26.
7. Burton JL, Savin JA, Champion RH. Introduction, epidemiology, and historical bibliography. In: Champion RH, Burton JL, Ebling FJG, editors. *Textbook of dermatology*; vol 1. Oxford: Blackwell, 1992:1-17.
8. Jemec GBE. Effect of localized surgical excisions in hidradenitis suppurativa. *J Am Acad Dermatol* 1988;18:1103-17.
9. Mortimer PS. Hidradenitis suppurativa—diagnostic criteria. In: Marks R, Plewig G, editors. *Acne and related disorders*. London; Martin Dunitz, 1989:359-60.

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