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Prevalence and incidence of doctor-diagnosed Dupuytren's disease: a population-based study

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Abstract

The prevalence and incidence of doctor-diagnosed Dupuytren's disease in the general population is unknown. From the healthcare register for Skåne region (population 1.3 million) in southern Sweden, we identified all residents aged ⩾20 years (on 31 December 2013), who 1998 to 2013 had consulted a doctor and received the diagnosis Dupuytren's disease (International Classification of Diseases 10th Revision code M720). During the 16 years, 7207 current residents (72% men) had been diagnosed with Dupuytren's disease; the prevalence among men was 1.35% and among women 0.5%. Of all people diagnosed, 56% had received treatment (87% fasciectomy). In 2013, the incidence of first-time doctor-diagnosed Dupuytren's disease among men was 14 and among women five per 10,000. The annual incidence among men aged ⩾50 years was 27 per 10,000. Clinically important Dupuytren's disease is common in the general population.

Level of evidence: III

Keywords

Dupuytren's disease, prevalence, incidence, fasciectomy, fasciotomy, collagenase

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Introduction

A recent systematic review and meta-analysis concerning the prevalence of Dupuytren's disease in the general population of Western countries have suggested a prevalence of up to 30% (Lanting et al., 2014). A high prevalence of Dupuytren's disease in the population does not necessarily reflect the burden of the disease on the healthcare system. In the majority of patients, the disease is characterized by asymptomatic minor soft tissue changes in the palm causing no functional limitations (Lanting et al., 2013). Therefore, many patients with Dupuytren's disease do not seek medical care. The extent to which Dupuytren's disease leads people to seek healthcare is unknown. We conducted a population-based study to estimate the prevalence and incidence of doctor-diagnosed Dupuytren's disease in the general population as related to age and sex. We also aimed to study the prevalence of different treatment methods for Dupuytren's disease.

Methods

The study population is the population of Skåne region (1.3 million inhabitants) in southern Sweden. We used the Skåne Healthcare Register (SHR) in which all patient visits to healthcare facilities in the region are registered. The SHR covers all public healthcare providers (outpatient and inpatient at primary, secondary and tertiary levels). From the SHR, we identified all residents aged ⩾20 years (on 31 December 2013) who had consulted a medical doctor during a 16-year period (1998–2013) and were given the diagnosis Dupuytren's disease (International Classification of Diseases, 10th Revision (ICD-10) code M720). We also determined the type of healthcare facility where the diagnosis was recorded (primary care, orthopaedic department or hand surgery department). In the study region, patients with Dupuytren's disease can receive treatment at several orthopaedic departments, usually by hand

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surgeons or orthopaedic specialists with an interest in upper-extremity surgery, or at the region's only hand surgery department by hand surgeons.

Prevalence

For estimation of the prevalence of Dupuytren's disease we included individuals who received the diagnosis as the primary or as a secondary diagnosis (doctors may register up to six diagnoses in a consultation). We excluded individuals who had moved out of Skåne region or had died by 31 December 2013. The denominator used for calculating the prevalence was the population of Skåne region on 31 December 2013. Since the SHR does not cover private healthcare providers that account for about 27% of all patient visits (related to physical health problems) to doctors in the Skåne region (Region Skåne, 2013) we reduced the denominator (at-risk population) by 20%. We chose this lower reduction level due to the fact that the register data has shown that about one-third of patients managed by private healthcare providers (not covered by the SHR) for a specific condition are also managed, during the course of receiving healthcare for that condition, by a provider within public healthcare where the diagnosis gets captured (Englund et al., 2010). This implies that about one-third patients who consult a private practitioner for Dupuytren's disease are subsequently referred to public healthcare (usually for possible treatment), as most orthopaedic and hand surgeons in the study region work in public healthcare. We also calculated the age and gender-specific prevalence.

Incidence

To calculate the incidence of first-time diagnosis of Dupuytren's disease we identified individuals who consulted a doctor for Dupuytren's disease during 2013, but had no record of the diagnosis in the preceding 15 years. For incidence estimation, we only included patients who received Dupuytren's disease as the primary diagnosis at the consultation; no patients who received the diagnosis were excluded. The denominator for calculating the incidence was the mean population of Skåne region during 2013 (average of populations on 1 January and 31 December), reduced by 20%. We also calculated the age and gender-specific incidences.

Treatment trends

Using the Swedish Classification of Healthcare Interventions codes, we identified the treatments given in association with a diagnosis of Dupuytren's disease. We included the hand-related intervention codes: NDM19 (fasciectomy), NDM09 (fasciotomy), TND11 (therapeutic injection), DNO10 (collagenase treatment), NDQ15 (total finger amputation), NDQ16 (partial finger amputation) and NDG46 (interphalangeal joint arthrodesis). To study treatment trends, we also determined the interventions used during 2013. Before 2013, the code NDM09 could have been used for any fasciotomy including open, needle or collagenase (available for clinical use in May 2011). From 1 January 2013, the specific code for collagenase treatment was introduced.

The study was approved by the Regional Ethical Review Board of Lund University.

Results

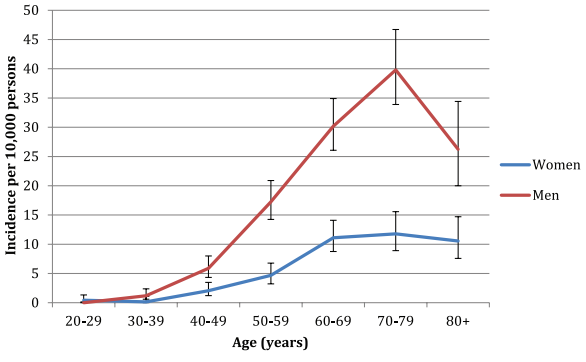
Prevalence

In the population of Skåne region, aged ⩾20 years on 31 December 2013, 7207 individuals (5208 men and 1999 women) had been diagnosed with Dupuytren's disease by a medical doctor during the past 16 years. The overall prevalence of doctor-diagnosed Dupuytren's disease was 0.92% (95% CI 0.90–0.94). The prevalence in men was 1.35% and in women 0.50% (Table 1). In the

Table 1. Prevalence of doctor-diagnosed Dupuytren's disease in Skåne region in Sweden (proportion of the population on 31 December 2013, that had been diagnosed by a medical doctor during the period 1998–2013).

Age (years)	Men *N*	Prevalence % (95% CI)*	Women *N*	Prevalence % (95% CI)*
20–29	16	0.02 (0.01–0.04)	15	0.02 (0.01–0.04)
30–39	51	0.08 (0.06–0.10)	21	0.03 (0.02–0.05)
40–49	252	0.36 (0.32–0.41)	78	0.11 (0.09–0.14)
50–59	671	1.1 (1.0–1.2)	205	0.34 (0.30–0.39)
60–69	1554	2.6 (2.5–2.7)	575	0.94 (0.87–1.0)
70–79	1757	4.6 (4.4–4.8)	625	1.5 (1.4–1.6)
80+	907	4.6 (4.3–4.9)	480	1.5 (1.3–1.6)
All	5208	1.35 (1.31–1.39)	1999	0.50 (0.48–0.52)

*The denominator (population on December 31, 2013, available from Statistics Sweden at www.scb.se) was reduced by 20% to account for individuals exclusively diagnosed and managed by private healthcare providers not covered by the Skåne Healthcare Register.



Women (n)	3	1	14	28	68	49	35
Men (n)	0	8	41	104	180	149	52

Figure 1. Incidence (95% confidence interval) of doctor-diagnosed Dupuytren's disease in 2013, based on patients who received the diagnosis during 2013 with no prior diagnosis in the preceding 15 years. The at-risk population (average of population at start and end of 2013, available from Statistics Sweden at www.scb.se) was reduced by 20% to account for incident cases exclusively diagnosed and managed by private healthcare providers not covered by the Skåne Healthcare Register.

population aged ⩾50 years, the prevalence in men was 2.74% (95% CI 2.66–2.82) and in women 0.96% (95% CI 0.92–1.0). The highest age-specific prevalence in men was 4.6% and in women 1.5%, both at age ⩾70 years.

The individuals diagnosed with Dupuytren's disease made a total of 43,511 visits (to any healthcare personnel) in which the diagnosis was recorded. Of these visits 19,590 (45%) occurred at a hand surgery department and 15,937 (37%) at an orthopaedic department. The remainder of the visits (18%) occurred in primary care.

Incidence

During 2013, 732 individuals aged ⩾20 years (534 men and 198 women) received a first-time diagnosis of Dupuytren's disease. The annual incidence in men was 13.8 (95% CI 12.7–15.0) per 10,000, with men aged 70–79 years having highest incidence of 40 per 10,000 (Figure 1). The incidence in men aged ⩾50 years was 27.2 (95% CI 24.8–29.7) per 10,000. The annual incidence in women was 4.9 (95% CI 4.3–5.7) per 10,000, with women aged 70–79 years having the highest incidence of 11.8 per 10,000. The incidence in women aged ⩾50 years was 9.1 (95% CI 7.6–10.6) per 10,000.

Treatment trends

During the 16 years, 4025 (56%) of the individuals in the study received 5853 interventions related to Dupuytren's disease in conjunction with the diagnosis. The treatment was fasciectomy in 5064 (86.5%), fasciotomy in 319 (5.5%), collagenase in 224 (3.8%), finger amputation in 108 (1.9%), unspecified injection in 91 (1.6%) and other treatment in 47 (0.8%). Of these treatments, 3834 (65.5%) were given in an orthopaedic and 2012 (34.4%) in a hand surgery department.

During 2013, 526 individuals received a total of 580 treatments related to Dupuytren's disease in conjunction with the diagnosis; incidence 6.7 (95% CI 6.2–7.3) per 10,000. The treatment was fasciectomy in 274 (47.2%; 261 individuals), collagenase in 224 (38.6%; 206 individuals), fasciotomy in 45 (7.8%; 42 individuals), unspecified injection in 26 (4.5%; 23 individuals) and other type of treatment in 11 (1.9%; 11 individuals); 17 individuals had two different treatment codes. Of all treatments, 391 (67%) were given in an orthopaedic and 187 (32%) in a hand surgery department.

Discussion

Our study shows that clinically important Dupuytren's disease is common in the general population. The prevalence and incidence of Dupuytren's disease diagnosed by a medical doctor was high. During 2013, the annual incidence of doctor-diagnosed Dupuytren's disease was 1.38 in men and 0.39 in women per 1000 individuals. In comparison, a nationwide epidemiological study on Diabetes in Sweden estimated an age-standardized incidence of 4.34 and 3.16 per 1000 individuals in men and women, respectively (Jansson et al., 2015). Of the male population aged 50 years or older at the end of 2013, almost 3% had been diagnosed with Dupuytren's disease in the past 16 years and in 2013, three of 1000 men aged 50 years or older sought healthcare for Dupuytren's disease for the first time. In a recent population-based study among persons aged 50 years or older in the Netherlands, the overall prevalence of Dupuytren's disease was 22%, but the prevalence of Dupuytren's contracture was 4% (Lanting et al., 2013). The corresponding prevalence in our study is somewhat lower because it is based on people who had consulted a doctor for the disease. Dupuytren's disease mostly manifests with asymptomatic minor soft tissue changes that do not limit hand function and often not subject to medical consultation. It is therefore important to differentiate between Dupuytren's disease and Dupuytren's contracture when interpreting findings of epidemiological studies, since the prevalence of contractures is much lower. Besides, even people with contractures may not seek healthcare if they have no functional limitations. In comparison to studies involving prevalence of Dupuytren's disease in general, our study presents an estimate of clinically relevant disease and its economic burden on the healthcare system.

Similar to previous studies, we found that almost three-quarters of patients who consulted for Dupuytren's disease were men. However, a recently published prevalence study from the Netherlands noted a male-to-female ratio of only 1.2:1 (Lanting et al., 2013). A possible explanation, according to the study authors, is that the natural course of Dupuytren's disease in men may differ, where men more often develop contractures that require treatment. It is well known that the prevalence of Dupuytren's disease increases with higher age. The prevalence in both genders was highest from age 70, with almost 5% of men diagnosed with Dupuytren's disease.

Consultation visits in which the diagnosis of Dupuytren's disease were recorded occurred mostly in a hand surgery or an orthopaedic department, suggesting Dupuytren's disease of such severity that required referral for treatment. Of note, a larger proportion of the treatments were recorded in orthopaedic than hand surgery departments. The large number of patient visits to healthcare personnel (a mean of six visits per patient) is an indication of the substantial health economic impact of Dupuytren's disease.

More than half of the patients diagnosed with Dupuytren's disease received treatment. Many patients were treated more than once, probably due to bilateral disease, disease extension or recurrence. The main treatment method in the study region during 1998–2013 was fasciectomy. According to a survey of hand surgeons in 12 European countries about their treatment of Dupuytren's contracture, fasciectomy was used in 70%–80% of the patients in 2008 (Dias et al., 2013). Data from the Hospital Episodes Statistics database in England showed that between 2003 and 2007 fasciectomy constituted 91% of the surgical treatments for Dupuytren's disease (Gerber et al., 2011). A similar treatment trend was observed in Canada, with fasciectomy accounting for about 95% of the surgical procedures between 2005 and 2010 (Liu et al., 2013). According to a recent systemic review, there is insufficient evidence to show the relative superiority of different surgical procedures (Rodrigues et al., 2015).

Collagenase injection is being increasingly used in many European countries since it became available in 2011. Collagenase injection has shown good short-term outcome (Atroshi et al., 2015; Peimer et al., 2015a), good safety (Peimer et al., 2015b), as well as high cost effectiveness, partly because the treatment requires significantly fewer patient visits (Atroshi et al., 2014). In the study region, collagenase treatment is reimbursed by the healthcare system. In our study, collagenase injection was used in at least 38% of the patients treated in 2013. Thus, a major change in the treatment of Dupuytren's disease has occurred in the study region, with more patients treated with collagenase injection at the expense of traditional surgical fasciectomy. The findings regarding treatment trends are however, specific to the Skåne region during the study period and the extent to which fasciectomy, needle fasciotomy and collagenase injections are currently used varies across regions and countries.

A strength of our study is the population-based design. All hospitals in the Skåne region report to the healthcare register and there are no other university hospitals or hospitals with hand surgery specialists in regions bordering to the Skåne region. Thus, it is highly unlikely that Skåne residents with Dupuytren's disease sought healthcare outside the region. The main limitation of our study is that the register does not cover private healthcare providers. However, specialist private practice in the region is limited and we reduced the at-risk population by 20% to account for patients exclusively diagnosed and treated in private practice. Since all treatment modalities are covered by the healthcare system, patients do not need to seek private care to receive a specific treatment. Another limitation is use of the same diagnostic code for Dupuytren's disease irrespective of severity and, as the register does not contain data about the side, repeated treatments on same hand cannot be differentiated from bilateral treatments. A possible limitation is that the data are based on diagnosis made by different doctors, but Dupuytren's disease is a relatively simple diagnosis and was mostly made in hand surgery and orthopaedic departments.

An important limitation is that the prevalence and incidence estimates may not be generalizable to other populations. Dupuytren's disease may have similar epidemiology in some Northern European countries (Lanting et al., 2014), but generalizability to other populations is uncertain. For example, a population-based study investigating doctor-diagnosed Dupuytren's disease in the Ethnic Chinese population in Taiwan reported a significantly lower overall prevalence in 2011 (including cases diagnosed since 2000) of approximately 0.006% of the total population and annual incidence of about 0.05 per 10,000 (Yeh et al., 2015). In the United States, a study that used an online survey of a randomly selected Internet-based research panel estimated the prevalence of Dupuytren's disease (self-reported physician diagnosis and/or surgical treatment) in the US adult population as 1%, with a higher prevalence estimate of 7% when including self-reported symptoms (Dibenedetti et al., 2011).

Our findings regarding the prevalence and incidence estimates of doctor-diagnosed Dupuytren's disease, based on 16 years of consultation data, are important considering the aging population with expectations of a higher level of physical activity. The prevalence and incidence estimates in this study should be helpful for future research about the epidemiology of Dupuytren's disease in Northern European countries and North American populations (in which the population prevalence of Dupuytren's disease may be similar). The findings regarding the relationship between the prevalence of doctor-diagnosed Dupuytren's disease and the incidence of new cases seeking healthcare, and the proportion of patients with disease of such severity that require treatment, will also be useful in healthcare planning and resource allocation. Our study shows that Dupuytren's disease is a common cause for medical consultation and that a majority of diagnosed individuals undergo treatment.

Declaration of Conflicting Interests The authors declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: IA was a member of an expert group on Dupuytren's disease for Pfizer in 2012 and participated in meetings organized by Sobi in 2014 and 2015. No other declarations to make.

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