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THE PREVALENCE OF DUPUYTREN'S DISEASE IN NORWAY

A Study in a Representative Population Sample of the Municipality of Haugesund

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Abstract. The prevalence of Dupuytren's disease has been examined in a population sample comprising 6 888 men and 9 062 women of a Norwegian town. The study covered the population over 16 years of age; on average, 71% of the men and 82.4% of the women attended. The disease was detected in 9.4% of the men and 2.8% of the women. The prevalence among the men rose from 0.2% in the 20–24-year class to a maximum of 36.8% at 70–74 years, and then declined. For the women the prevalence rose from 0.3% for the 40–44-year class to a maximum of 25% at 80–84 years, after which it diminished. The ratio of men to women was infinite in the youngest classes, but fell almost hyperbolically to 1.2 in the oldest group. Among the younger persons the disease was usually unilateral, but among the older ones it was most commonly bilateral. At all ages and in both sexes the unilateral affection was usually located in the right hand.

It has been discussed whether, when he held his famous lectures in Paris in the 1830s, Baron Dupuytren was acquainted with earlier descriptions of this particular type of contracture of the fingers (Plater, 1640; Cooper, 1822). His observations and description (Dupuytren, 1834) are scientifically so superior to those of this predecessors that there is little reason to consider any alteration in the designation "Dupuytren's contracture" or, better, "Dupuytren's disease", which has become established in the medical literature over a long period.

Despite some 140 years' research the nature and demography of this disease are still not entirely clear. Anderson (1897) seldom encountered Dupuytren's disease in the Far East, and Hueston (1960) has the same experience. In the United States the disease is reported to be more frequent among whites than negroes (Yost, Winters & Fett, 1955; Nichols, 1899). Graubard (1954) observed it to be most frequent among Americans of German and Irish origin. Kipikasa (1968) found extremely few cases among gypsies. Hueston concluded from the literature and his own observations that the disease is apparently restricted to people of European origin.

Dupuytren's disease appears to occur with varying frequency also within these population groups. In Britain, Early (1962) found it in 18.1% of the men and 9% of the women over 75 years. In the same age group of an American material Gordon (1954) found a frequency of 28.7% in men and 35% in women. In Australia it has been recorded in 25.6% of men and 20.4% of women over 60 years (Hueston, 1962). In Czechoslovakia, Kipikasa observed that between 70 and 100 years of age the prevalence increased from 42 to 54% in men and from 17 to 30% in women. In Germany a total frequency of 6.57% in men and 1.69% in women has been reported for a small group (Jung, 1962). Among male brewery workers in Denmark an increase from 7.6 to 48.3% has been reported between 30 and 60 years (Lund, 1941). In 3 towns in Sweden Hellgren (1964) found a somewhat varying prevalence—consistently somewhat less than 20% in men aged 70–79, and between 3 and 9% in women.

The statistics are not always comparable, and are often based on small materials. Most of them are from hospital series, which are to a greater or lesser degree selective. There is still a need for reliable data for an analysis of the epidemiology; for the epidemiologic pattern of a disease can possibly lead to fruitful hypotheses on its causation (Lilienfeld, 1960).

Table I. *The non-response group of men by age and reasons, compared with the attendance rate*

Reason for non-response, age ...	16–24	25–34	35–44	45–54	55–64	65–74	75–84	85–94	Total
Tuberculosis under control	4	2	2	11	13	8	2	1	43
Recent X-ray	135	120	67	76	44	58	6	1	507
Military service	150	8	0	0	0	0	0	0	158
Students	106	27	1	1	0	0	0	0	135
Sailors	71	100	63	65	36	0	0	0	335
Invalids, in bed	14	9	13	8	30	34	38	16	162
Temporarily away	127	46	25	15	18	7	1	1	240
Moved	40	35	12	14	6	3	1	0	111
No contact[a]	343	245	164	122	108	78	50	17	1 127
Total non-response	990	592	347	312	255	188	98	36	2 818
Attended	1 261	976	1 021	1 472	1 152	681	292	27	6 883
Attendance rate (per cent)	56.0	60.7	74.7	82.5	81.9	78.6	74.9	42.7	71

[a] Absent without reason.

The present article furnishes an account of an epidemiologic study of Dupuytren's disease in a Norwegian urban population.

MATERIAL AND METHODS

In connection with a mass photofluorographic chest examination in Haugesund between October and December, 1969, an examination was made of the hands for Dupuytren's disease. For practical reasons it was impossible to examine any other sites of the condition (e.g., soles of the feet, penis). Haugesund is a small coastal town that has seen only a modest population development, and the 1960 census showed a population of 27 015, mostly resident within a central part of the town 4 sq. km in area. All persons over 16 years in the municipality were required to attend for the chest examination and 16 005 did so. The examination of the hands was voluntary, but only 1 person refused. In addition, a few that had not reached 16 years were excluded, giving a final total of 15 950. All were examined by the author. The data collected were entered on punch-cards and analysed in a Bull punch-card machine.

Non-response and representavity

There were no circumstances in the announcement of the study that might have introduced selective factors in the material for Dupuytren's disease.

When the study was begun there were registration cards for each person required to attend, so that there was a full survey of the sex and age distribution of those not seen, and so far as possible the reasons for absence were ascertained (Tables I and II). Non-response was most common among the youngest and oldest. From the aspect of the study it was most troublesome in age groups over 85 years, with attendances down to 42.7% for men and 28.8% for women. However, the attendance was at least 75% for the 35–84-year classes for the men and the 16–74-year classes for the women.

The most common grounds for absence were illness or "absent without reason". A fairly high incidence of Dupuytren's disease has been found among persons suffering from tuberculosis (Hueston, 1960; Gordon; Yost et al.). In the present series the tuberculosis group that did not attend the examination is small for both men and women, and even a clear over-representation of Dupuytren's disease among these could not appreciably affect the results.

Refsum (1952) has shown that the group "absent without reason" in a photofluorographic examination displayed a considerably higher frequency of tuberculosis than the population on average; in accordance with the above, this may mean that the observed prevalence of Dupuytren's disease is too low, but any shift would presumably be small, if it is noticeable at all.

On the basis of his own observations and the literature, Hueston (1963) states that Dupuytren's disease is somewhat more frequent in invalids and the elderly who are chronically sick. Such persons may have difficulty in attending screening examinations, and in this study they constituted a fairly large proportion of the absentees. In theory this could result in the observed frequency of Dupuytren's disease being on the low side, but there is reason to believe that any shift is small.

As regards the other reasons for absence there were no circumstances that supposedly could affect the result.

There are thus 3 circumstances for the non-response group that in theory might have caused the observed frequency of Dupuytren's disease to be a little too low, but altogether any shift will probably have been small.

The sample

The investigator has experience in the diagnosis of Dupuytren's disease from 1 year's work at a department of plastic surgery and more than 10 years at departments

Table II. *The non-response group of women by age and reasons, compared with the attendance rate*

Reason for non-response, age ...	16–24	25–34	35–44	45–54	55–64	65–74	75–84	85–94	Total
Tuberculosis under control	2	0	5	10	1	0	2	1	21
Recent X-ray	50	24	33	30	26	93	16	0	272
Students	27	7	1	0	0	0	0	0	35
Sailors	13	10	0	3	3	0	0	0	29
Invalids, in bed	7	5	8	22	37	62	118	75	334
Temporarily away	138	18	7	7	7	11	4	1	193
Moved	69	27	8	10	2	2	1	3	122
No contact[a]	250	128	98	110	90	112	112	30	930
Total non-response	556	119	160	192	166	280	253	110	1 936
Attended	1 618	1 270	1 286	1 650	1 527	1 019	408	44	9 062
Attendance rate (per cent)	74.4	85.3	88.9	90.7	90.2	78.5	61.8	28.8	82.4

[a] Absent without reason.

of surgery where operations for this disease are carried out. In the diagnosis, importance is placed on the subcutaneous nodule adherent to the covering skin—often with puckering of the skin. The nodules are distinguishable from ordinary occupational indurations, and from affections of the underlying tendons and tendon sheaths. The diagnosis is further confirmed where there are bands and contractures. Diagnostic problems sometimes arise where there is an extremely small nodule, and in some cases of scars from earlier injuries or inflammation. In a few doubtful cases Dupuytren's disease was not recorded.

An examination of the hands was carried out in 15 950 persons and Dupuytren's disease was diagnosed in 901 to some degree (Table III). The youngest man was 24 years and the oldest 91; the corresponding ages for women were 42 and 90 years. The prevalence of Dupuytren's disease in the population examined is presented for 5 and 10 year classes in Figs. 1 and 2. For men the prevalence increased rapidly from 40–44 years to a maximum of 36.8% at 70–74 years; for women the rise began at 55–59 years and increased to a maximum of 25% at 85–89 years. The steepest rise and maximum prevalence for women occurred about 15 years later than for the men, but the maximum was not so high.

The left hand was less commonly affected than the right (Tables IV–V)—in all age classes and both sexes. Up to 45 years for men and 65 years for women the bilateral affection was not appreciably more common than the unilateral, but thereafter the bilateral became increasingly more common.

The ratio of men to women was infinite in the lower age groups, but appeared to decrease almost hyperbolically towards the limiting value of unity (Table VI).

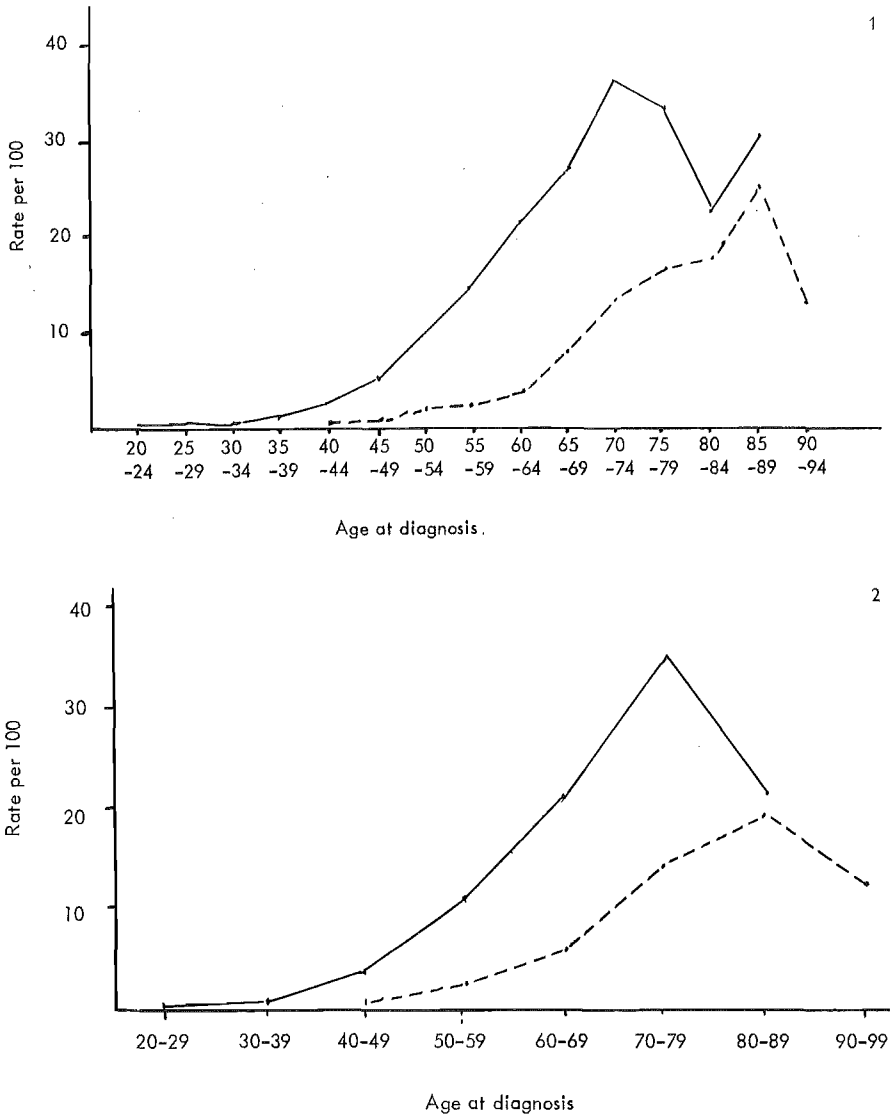
DISCUSSION

There seems to be some difference of opinion as to whether the mere presence of nodules, with no bands or contractures, should be diagnosed as Dupuytren's disease (Lund). However, since the nodule is not only characteristic and distinct when it occurs as a clinical finding but is also histologically typical, it should probably be regarded as an early stage of Dupuytren's disease (Hueston, 1960; Krogius, 1922; Nichols).

As regards the occurrence of Dupuytren's disease in children the literature contains only case reports, and very little actual information (Bun-

Table III. *The populations and number of persons with Dupuytren's disease by age and sex*

	Men		Women	
Age	Population	Dupuytren's disease	Population	Dupuytren's disease
16–19	732	0	779	0
20–24	529	1	839	0
25–29	532	2	671	0
30–34	444	1	599	0
35–39	461	5	585	0
40–44	560	14	701	2
45–49	728	36	949	9
50–54	744	74	926	16
55–59	617	89	832	19
60–64	535	117	695	26
65–69	411	111	625	50
70–74	270	99	394	53
75–79	205	69	273	45
80–84	87	20	135	24
85–89	26	8	36	9
90–94	1	1	8	1
95–99	1	0	2	0
Unknown	5	0	13	0
Total	6 888	647	9 062	254



Figs. 1 and 2. The prevalence of Dupuytren's disease in a representative population sample in Norway, by 5- and 10-year classes. —, Men; - - -, women.

nell, 1944, a 17-year-old boy: Jakubik, 1965, a girl of 11 years and a boy of 17), and many authors consider it to occur rarely in childhood. The lower age limit of the material was 16 years, and was determined in the main investigation. Most authors report a comparatively steady increase in prevalence with age, but a number of series contain no persons over 70–75 years. In the present material the maximum prevalence for men occurred at 70–74 years and for women at 85–89. The trend is so marked that it is hardly eliminated even by comparatively large shifts after correction of the frequency in these age groups (cf., non-response). The frequency decreased a few years after pension age. A constant rate might be due to the fact that no new cases appeared. The fall in the frequency might be ascribed to two factors, namely (1) total regression of the pathologic process, and (2) a higher mortality for persons with Dupuytren's disease than for the general population in the relevant age classes.

As persons with normal hands were not examined further, there is no record of any completely spontaneous recovery; however, a number of elderly persons with Dupuytren's disease stated voluntarily that both contractures and fibrosis had regressed appreciably after they had stopped working. This circumstance was unfortunately not foreseen at the time the study was planned and therefore no data are available for a closer analysis. Since Dupuytren's disease tends to occur more frequently in invalids and chronically sick it is not improbable that there was an excess mortality in this group; moreover, it would supposedly occur first at fairly advanced age. This might account in some measure for the decrease in the frequency of Dupuytren's disease in the oldest age classes, but no detailed analysis on the basis of the present material is possible.

Statistics based on surgical series of Dupuytren's disease consistently show a much higher frequency in men than in women. Kanavel, Koch & Mason (1929) give the sex ratio as 10 : 1, Wallace (1965) found a ratio of 7 : 1 in Britain, Gordon 3 : 1 in the United States, and Hueston (1962) 2 : 1 in Australia. The ratio for the present series was, totally, 3.35 : 1. The greater sex difference in the lower age classes approaches asymptotically the limiting value of unit at advanced age.

The explanation for the increasing predominance of bilateral affection with age offered by some authors, namely, that the disease usually begins on one hand and sooner or later involves the other, finds no support in the findings of the present study, where a considerable number of bilateral cases are found even among the oldest subjects, especially the women.

Table IV. *Distribution by age and affected hand of 647 men and 254 women with Dupuytren's disease*

	Men			Women		
Age	Right	Left	Bilateral	Right	Left	Bilateral
20–24	0	0	1	0	0	0
25–29	0	2	0	0	0	0
30–34	0	0	1	0	0	0
35–39	2	1	2	0	0	0
40–44	5	2	7	2	0	0
45–49	14	4	18	3	6	0
50–54	22	12	40	11	5	0
55–59	25	19	45	11	3	5
60–64	34	17	66	9	7	10
65–69	27	10	74	21	7	22
70–74	22	16	61	12	12	29
75–79	12	12	45	14	6	25
80–84	4	2	14	8	2	14
85–89	1	1	6	3	2	4
90–94	1	0	0	0	0	1
Total	169	98	380	94	50	110

Table V. *Sex ratio for Dupuytren's disease by age class*

	Rate per 100		
Age	Men	Women	Ratio men/women
20–24	0.19	0	∞
25–29	0.38	0	∞
30–34	0.23	0	∞
35–39	1.08	0	∞
40–44	2.50	0.29	8.4
45–49	4.95	0.95	5.2
50–54	9.95	1.73	5.8
55–59	14.42	2.28	6.1
60–64	21.87	3.74	5.8
65–69	27.01	8.00	3.4
70–74	36.67	13.45	2.7
75–79	33.66	16.48	2.0
80–84	22.99	17.78	1.3
85–89	30.77	25.00	1.2
Mean	9.38	2.80	3.4

REFERENCES

Anderson, W. 1897. Deformities of the fingers and toes. London. Cited by Skoog, T. 1948. Dupuytren's contracture. *Acta Chir Scand,* Suppl. *139,* p. 29.

Bunnell, S. 1944. *Surgery of the hand,* p. 162. J. B. Lippincott Co., Philadelphia.

Cooper, A. 1822. A treatise on dislocations and fractures of the joints. London. Cited by Beck, W. 1954. Untersuchungen über die Häufigkeit der Dupuytrenschen Kontraktur. *Mschr Unfallheilk 52,* 69.

Dupuytren, G. 1834. Permanent retraction of the fingers, produced by an affection of the palmar fascia. *Lancet II,* 222.

Early, P. 1962. Population studies in Dupuytren's contracture. *J Bone Joint Surg 44-B,* 602.

Gordon, S. 1954. Dupuytren's contracture: The significance of various factors in its etiology. *Ann Surg 140,* 683.

Graubard, D. J. 1954. Dupuytren's contracture. An etiologic study. *J Inter Coll Surg 21,* 15.

Hellgren, L. 1964. The prevalence of Dupuytren's contracture in Sweden. Paper read before the Scandinavian Congress of Rheumatologists in Lund, Sweden.

Hueston, J. T. 1960. The incidence of Dupuytren's contracture. *Med J Austral 2,* 999.

— 1962. Further studies of the incidence of Dupuytren's contracture. *Med J Austral 1,* 586.

— 1963. *Dupuytren's contracture,* pp. 12–20. E. & S. Livingstone Ltd., Edinburgh & London.

Jakubik, J. 1965. Early occurrence of Dupuytren's contracture. *Acta Chir Ortop Traum Czech 32,* 27.

Jung, H. D. 1962. Mathematisch-Statistische Untersuchungen, Beschreibungen und Analysen über die Häufigkeit der Dupuytrenschen Fingerkontraktur bei Diabetikern und Stoffwechselgesunden. *Deutsch Gesundh 18,* 9.

Kanavel, A. B., Koch, S. L. & Mason, M. L. 1929. Dupuytren's contracture. *Surg Gynec Obstet 48,* 145.

Kipikasa, A. 1968. Demographic studies on the occurrence of Dupuytren's contracture. *Rozhl Chir 47,* 211.

Krogius, A. 1922. Studien und Betrachtungen über die Pathogenese der Dupuytrenschen Fingerkontraktur. *Acta Chir Scand 54,* 33.

Lilienfeld, A. M. 1960. The distribution of disease in the population. *J Chron Dis 11,* 471.

Lund, M. 1941. Dupuytren's contracture and epilepsia. *Acta Psych Neurol 16,* 465.

Nichols, J. B. 1899. A clinical study of Dupuytren's contracture of the palmar and digital fascia. *Amer J Med Sci 117,* 285.

Plater, 1640. *Observationum liber 1,* 140. Cited by Beck, W. 1954. Untersuchungen über die Häufigkeit der Dupuytrenschen kontraktur. *Mschr Unfallheilk 52,* 69.

Refsum, E. 1952. Mass investigation by photofluorography. *Acta Tuberc Scand 27,* 287.

Wallace, A. F. 1965. Dupuytren's contracture in women. *Brit J Plast Surg 18,* 385.

Yost, J., Winters, T. & Fett, H. C. 1955. Dupuytren's contracture. A statistical study. *Amer J Surg 90,* 568.