

KNUCKLE PADS IN DUPUYTREN'S DISEASE

OTTO A. MIKKELSEN, Haugesund, Norway

SUMMARY

Knuckle pads are not exclusively found in persons with Dupuytren's disease, but they occur four times more often in these patients than in the general population (in Norway). Occurrence of knuckle pads in persons with Dupuytren's disease does not seem to imply a higher predisposition or a more aggressive disease.

INTRODUCTION

The first note on knuckle pads in connection with Dupuytren's disease was probably made by Garrod 1893. This lesion has since then been described by numerous authors under different names. According to Krantz (1938) Gottron introduced the name *helodermia*, and this term has been used by several authors. Hauck (1924) named it *subcutaneous fibroma*, which is an accurate term from an anatomical point of view. Moncorps (1937) used the term *keratosis supracapularis*, which in fact is a little misleading. The English term *knuckle pad* is by now widely used in the literature, and, leaving few possibilities of misunderstanding, it will probably be established by use.

Weber (1938) found in a micro-study of these lesions, that they consisted of subcutaneous fibrous tissue. He mentioned too, the common coexistence of Dupuytren's disease, but did not exclude the possibility of traumatic aetiology. He claimed that the lesions never disappeared when they were established, and they were more common in elderly than in younger people.

Krantz (1938) published a thoroughly clinical description and suspected diagnostic difficulties because of scanty information in relevant textbooks. Krogius (1922) may be an example of such misinterpretation, describing a family with high frequency of Dupuytren's disease and several members with nodules on the fingers, considering them to be of uric acid origin.

Hueston and Wilson (1973) point out that certain occupations can produce knuckle pads. These pads, however, subside when the occupation is discontinued, and accordingly they behave more like occupational hyperkeratoses. Wilson (1972) reports occupational knuckle pads in the Australian sheep shearer.

There seem to be geographical variations in the frequency of knuckle pads in Dupuytren's disease. In Great Britain, Early (1962) reports 21.3% in men and 12.6% in women. From the U.S.A., Boyes (1954) reports 11%. In France, Gosset (1977) states that knuckle pads and plantar lesions are extremely rare in patients with Dupuytren's disease. From Scandinavia two classic publications on Dupuytren's disease have dealt with this problem. Lund (1941) investigated the correlation between epilepsy and Dupuytren's disease in Denmark, and found 29% of men and 13% of women with epilepsy to have knuckle pads. Coexistence of Dupuytren's disease was frequent. In Sweden, Skoog (1948) found that twenty-two of fifty persons with Dupuytren's disease had knuckle pads (44%). Hueston (1963) found in Australia that 75% of patients with recurrent Dupuytren's disease had knuckle pads, while the frequency in primary disease was only 20%.

O. A. Mikkelsen, M.D., Haugesund Sjukhus, 5500 Haugesund, Norway.

The purpose of the present paper is to study the frequency of knuckle pads in persons with Dupuytren's disease in Norway, and to see if there is any correlation with certain characteristics or severity of the disease.

MATERIAL AND METHODS

In connection with a mass photo-fluorographic chest examination in the municipality of Haugesund, Norway, in the year 1969, the hands of 15,960 persons were examined for Dupuytren's disease. A critical evaluation of the material, including the problem of non response, has been published elsewhere (Mikkelsen 1972).

The diagnosis of knuckle pads relied on clinical examination, and was based upon the following criteria: Subcutaneous thickening over the dorsal aspect of the proximal interphalangeal joints of the fingers, mobile over the joint capsule, but adherent to the skin.

For practical reasons, it was impossible to examine all persons without Dupuytren's disease for knuckle pads. The whole examination went on for three months, and during two weeks every person attending was examined for knuckle pads. Thus a normal material of 752 men and 1,119 women was collected.

TABLE 1
THE FREQUENCY OF KNUCKLE PADS IN PERSONS WITHOUT DUPUYTREN'S DISEASE
(k.p. = knuckle pads)

MEN									
	Age								
	20-29	30-39	30-40	50-59	60-69	70-79	80-89		Total
No of persons studied	171	194	184	128	48	23	4		752
Persons with k.p.	3	15	26	13	8	3	0		68
Per cent	1.7	7.2	14.2	9.2	14.3	11.5			9.0
WOMEN									
	Age								
	20-29	30-39	30-40	50-59	60-69	70-79	80-89		Total
No of persons studied	272	264	260	179	68	60	16		1,119
Persons with k.p.	1	13	34	27	9	9	3		96
Per cent	0.4	4.7	11.6	13.1	11.7	13.0	15.8		8.6

TABLE 2
THE FREQUENCY OF KNUCKLE PADS IN THE GENERAL POPULATION AND IN DUPUYTREN'S DISEASE

MEN			
	Total	Knuckle pads	Per cent
Normal material	752	68	9.0
Dupuytren material	623 ^{x)}	303	48.7
^{x)} Information on knuckle pads is missing for 24 men in the Dupuytren-material.			
WOMEN			
	Total	Knuckle pads	Per cent
Normal material	1,119	96	8.6
Dupuytren material	246 ^{x)}	82	33.3
^{x)} Information on knuckle pads is missing for 8 women with Dupuytren's disease.			

TABLE 3
THE FREQUENCY OF KNUCKLE PADS IN MONOLATERAL AND BILATERAL DUPUYTREN'S DISEASE.

MEN			
Knuckle pads	Affected hand with Dupuytren's disease		
	Right	Left	Bilateral
+	70 (41.9%)	48 (50%)	185 (51.4%)
-	97	48	175
No information	2	2	20
Total	169	98	380
WOMEN			
Knuckle pads	Affected hand with Dupuytren's disease		
	Right	Left	Bilateral
+	26 (28%)	21 (43.8%)	35 (33.2%)
-	67	27	70
No information	1	2	5
Total	94	50	110

TABLE 4
THE OCCURRENCE OF DUPUYTREN'S DISEASE IN THE PATIENT'S FAMILY

MEN		
Dupuytren's disease in relatives	Number of patients with Dupuytren's d.	Dupuytren's d. and knuckle pads
+	150 (23.7%)	74 (25.2%)
-	480	220
WOMEN		
Dupuytren's disease in relatives	Number of patients with Dupuytren's d.	Dupuytren's d. and knuckle pads
+	82 (32.3%)	19 (23.4%)
-	172	62

RESULTS

The total frequency of knuckle pads in the general population over sixteen years of age was 9.0% in men and 8.6% of the women (Table 1). The frequency is higher over forty years of age than in younger age classes.

Knuckle pads were, however, much more common in persons with Dupuytren's disease (Table 2). As there were no women and only nine men under the age of forty, the correlation with the normal material in corresponding age classes was therefore less informative. The frequency of knuckle pads was higher in persons with affection of the left hand only, and in bilateral affections (Table 3). A positive history of Dupuytren's disease in the family, is about the same in persons with, as in persons without knuckle pads (Table 4).

Sixteen of thirty-six men — 45% (women five of nine — 62%) — operated because of Dupuytren's disease had knuckle pads.

The stage of disease was correlated in persons with and persons without knuckle pads. There was no significant difference in mean stage of disease in the groups mentioned.

DISCUSSION

There were usually no problems concerning the diagnosis of knuckle pads. During the investigation, only three lesions were encountered as actual differential diagnosis but none created real problems: Heberdens' nodules at the proximal interphalangeal joints (Bouchard's nodules), capsular swellings and simple occupational keratoses. The nodules are immobile over the joint capsule. The same applies to capsular swelling of the proximal interphalangeal joint. These are furthermore palpable to the side of the joint, while the knuckle pad is situated in the midline. Simple hyperkeratosis is rare in this region, and presents itself as a stiff thickening of the horny layer of the skin covering the knuckle.

The patients were often not aware of having knuckle pads. It was therefore problematic to obtain information of starting time, growth or eventual decrease. A few with rather big pads were concerned for cosmetic reasons. Otherwise no complaints due to the knuckle pads were encountered, and none had had their pads removed.

The study reveals that a little less than 10% of the population without Dupuytren's disease have knuckle pads. The frequency is higher in older people than in younger. The frequency of knuckle pads is, however, much higher in persons with Dupuytren's disease, and is very close to that found by Skoog. It would be of great interest to know, whether persons without Dupuytren's disease and with knuckle pads belong to typical "Dupuytren families", and how many of them later on developed Dupuytren's disease.

According to the literature, there are rather big differences in the frequency of knuckle pads in Dupuytren's disease in the different countries, and the present study gives no clue to the elucidation of this puzzling point. Most of the statistics concerning Dupuytren's disease are based upon hospital materials, and as pointed out before, this can lead to incomplete or incorrect conclusions (Mikkelsen 1976). The occurrence of knuckle pads in operated and unoperated persons in the present material, is, however, almost equal. The surgical statistics should therefore be reliable in this particular matter.

The supposition of a higher predisposition and a more aggressive disease in persons with Dupuytren's disease and knuckle pads, is not supported by the present study. Table 3 might be interpreted in that direction, but the stage of disease and the frequency of operations are equal in the two groups.

REFERENCES

- BOYES, J. H. (1954) Dupuytren's Contracture. Notes on the age at onset and the relationship to handedness. *American Journal of Surgery*, 88: 147-154.
- EARLY, P. F. (1962) Population Studies in Dupuytren's Contracture. *Journal of Bone and Joint Surgery*, 44B: 602-613.
- GARROD, Sir A. E. (1893) On an Unusual Form of Nodule upon the Joints of the Fingers. *St. Bartholomew's Hospital Reports*, 29: 157-161.
- GOSSET, J. (1977) Personal communication.
- GOTTRON, cited by W. Krantz (1938) in *The Yearbook of Dermatology and Syphilis*, p.262.
- HUESTON, J. T. (1963) Dupuytren's Contracture. Edinburgh and London. Eds. Livingstone Ltd. pp.54-63.
- HUESTON, J. T. (1963) Dupuytren's Contracture. Edinburgh and London. Eds. Livingstone *Journal of Surgery*, 42: 274-277.
- HUACK, G. (1924) Über subkutane Fibrome an der Dorsalseite der Fingermittelgelenke. *Medizinische Klinik Wochenschrift für praktische Ärzte*. 20: II 1569.

- KRANTZ, W. (1938) Über die Fingerknöchelpolster ("Knuckle-pads"). *Dermatologische Wochenschrift*, 107: 945-949.
- KROGIUS, A. (1922) Studien und Betrachtungen über die Pathogenese der Dupuytren'schen Fingerkontraktur. *Acta Chirurgica Scandinavica*, 54, 33-50.
- LUND, M. (1941) Dupuytren's Contracture And Epilepsy. The clinical connection between Dupuytren's Contracture, fibroma plantae, periarthrosis humeri, heloderma, induratio penis plastica and epilepsy, with an attempt at a pathogenic valuation. *Acta Psychiatrica et Neurologica Scandinavica*, 16: 465-492.
- MIKKELSEN, O. A. (1972) The Prevalence of Dupuytren's Disease in Norway. A Study in a Representative Population Sample of the Municipality of Haugesund. *Acta Chirurgica Scandinavica*, 138: 695-700.
- MIKKELSEN, O. A. (1976) Dupuytren's Disease — A Study of the Pattern of Distribution and Stage of Contracture in The Hand. *The Hand*, 8: 265-271.
- MONCORPS. (1937) Keratosis supracapularis s. pulvinata. *Zeutralblatt für Haut und Geschlechtskrankheiten und deren Grenzgebiete*, 54: 291-292.
- SKOOG, T. (1948) Dupuytren's Contraction with Special Reference to Aetiology and Improved Surgical Treatment. Its Occurrence in Epileptics. Note on Knuckle Pad. *Acta Chirurgica Scandinavica*, Vol. 96, Suppl. 139, p.190.
- WILSON, W. F. (1972) Shearer's Knuckles. *The Australian and New Zealand Journal of Surgery*, 42: 192-193.
- WEBER, F. P. (1938) A Note on Dupuytren's Contraction, Camptodactylia and Knuckle-Pads. *The British Journal of Dermatology and Syphilis*, 50: 26-31.