

Dupuytren's contracture in Ethiopia

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Abstract

Dupuytren's contracture is believed to be rare in Africa. We have observed the disease in many patients coming to our hospital. This study aimed to provide information concerning the occurrence of the disease and risk factors in these patients. All 75 patients who were referred to the hospital during a 2-year period because of a hand problem that was diagnosed as Dupuytren's contracture were included. The demographic data of the patients and possible risk factors were recorded and compared with a control group. The male to female ratio was 18:1. The little and ring fingers were most commonly affected. A total of 43 had bilateral hand involvement. The condition affected only the left hand in one patient. Six men also had fibromatosis of the soles of the feet and three of the penis. There was a statistically significant association with hypertension and alcohol consumption, but not with diabetes mellitus. We conclude that there are more cases of Dupuytren's contracture in Ethiopia than previously thought.

Level of evidence: III

Keywords

Dupuytren's contracture, Africa, prevalence, blacks, negro

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Introduction

It has become increasingly clear that Dupuytren's disease is mainly genetically transmitted (Larsen et al., 2015). Previous reports have indicated that it primarily affects Caucasians, especially Scandinavians and those of northern European ancestry. Dupuytren's contracture in Africa is believed to be rare and only a few cases have been documented (Furnas, 1979; Haeseker, 1981; Makhlof et al., 1987; Mennen, 1986; Plasse, 1979; Rosenfeld et al., 1983; Zaworski and Mann, 1979). To our knowledge, there is no previous population-based study from Ethiopia dealing with Dupuytren's contracture, with the exception of one study that mentioned the rarity of Dupuytren's contracture in patients with chronic liver disease (Tsega et al., 1992). The referral of many patients with the disease prompted us to document our experience. The purpose of this study was to provide information concerning the burden of the disease in Ethiopia, as well as related risk factors in the patients.

Patients and methods

We prospectively recorded relevant data on all patients who came to our hospital from March 2010

to March 2012 because of a condition of the hand or finger that proved clinically to be Dupuytren's disease. We noted the demographic data of the patients (age, sex, occupation ethnic group and address), and possible risk factors such as medical illness (epilepsy, diabetes mellitus, tuberculosis, liver disease and hypertension). Patients and controls were considered to be hypertensive when diastolic blood pressures of more than 90 mmHg and systolic blood pressure of more than 140 mmHg were found on two or more measurements 4 h or more apart. Habits of alcohol intake and smoking were also recorded. Respondents who stated that they consumed more

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than one alcoholic beverage per week were considered to be 'alcohol users'.

Clinical findings on the palms and digits were documented, and contractures of the finger joints were measured with a goniometer. Other fibromatoses that are associated with Dupuytren's disease were looked for in the soles of the feet and on the external genitalia of male patients.

A control population was selected from outpatient and inpatient units for comparison. One control was found for each patient. The selection criteria were that they be of the same sex and of an age within 5 years of the patients. The management of the ALERT Center approved the study. Statistical evaluation was with the Chi-squared test. *P*-values <0.05 were considered to be significant.

Results

A total of 75 patients with Dupuytren's disease of the hands were identified during the 2 years of investigation. There were 71 men and four women, a ratio of 18:1. The mean age at presentation was 57 years (range 21–79). More than half of the patients were aged between 50 and 69 years (Table 1). Both hands were affected in 43 patients, the right hand was affected in 31 and one patient had isolated left hand involvement. The most commonly affected fingers were the little and ring fingers. The index and thumb were the least often affected (Table 2).

Most of the patients with Dupuytren's disease were from the northern part of Ethiopia, where the dominant ethnic groups are the Amhara and Tigrayan. Most of the controls proved to be from these regions, indicating that the geographical distribution in the patients with Dupuytren's disease was similar to the normal geographical distribution of other hospital patients (Figure 1).

Severe flexion contracture (>60°) was most often found at the metacarpophalangeal and proximal interphalangeal joints of the ring and little fingers (Table 3). Plantar fibromatosis (Ledderhose's disease) was found in six patients and penile involvement (Peyronie's disease) in three. Nine patients had knuckle pads.

Hypertension was significantly more common in patients with Dupuytren's contracture and there were significantly more alcohol users among them (Table 4). The proportion who smoked was higher among Dupuytren patients, but the difference was not statistically significant ($p < 0.08$). There was little difference between the two groups with respect to the other possible risk factors that were investigated. Daily labourers and farmers accounted for 33 of the cases, compared with 27 in the control group (n.s.). A total of 25 of the cases and 33 of the controls lived in rural areas (n.s.).

Table 1. The age distribution of patients.

Age	Patients
20–29	3
30–39	1
40–49	15
50–59	21
60–69	21
70–79	14

Table 2. The distribution of Dupuytren's disease in the hands of 75 patients.

Digit	Right hand	Left hand
Little	44	26
Ring	54	21
Middle	30	17
Index	14	11
Thumb	6	7

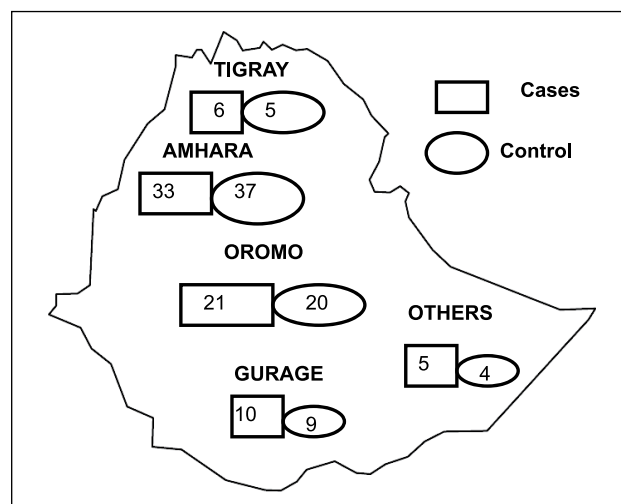


Figure 1. Distribution of cases and controls by region within Ethiopia.

Discussion

Dupuytren's disease has mainly been reported in Caucasian populations, but we have found it to be fairly frequent in Ethiopia. Many patients learn to make do with deformed fingers, and it may be that in poor countries they do not feel that it is necessary to seek medical advice for it [Zerajic and Finsen, 2004]. The male to female ratio among our patients was found to be very high (18:1), far higher than in other studies [Wilbrand et al., 1999]. A possible explanation for this may be that Ethiopian women are less likely to seek medical advice about the condition than men.

Over half of the patients had bilateral involvement and in only one was the condition confined to the left

Table 3. The distribution of contractures.

Digit		Contracture 30°–60°	Contracture >60°
Little	DIP	1	1
	PIP	20	15
	MCP	12	21
Ring	DIP	2	1
	PIP	14	15
	MCP	22	14
Middle	DIP	1	2
	PIP	11	11
	MCP	11	4
Index	DIP	5	2
	PIP	2	3
	MCP	2	8
Thumb	IP	1	2
	MCP	1	2

DIP: distal interphalangeal joint; IP: interphalangeal joint; MCP: metacarpophalangeal joint; PIP: proximal interphalangeal joint.

Table 4. Occurrence of possible risk factors among 75 patients with Dupuytren's disease and 75 random controls.

	Patients	Controls
Family history of Dupuytren's disease	5	2
Hypertension	33***	10
Epilepsy	1	1
Diabetes mellitus	4	6
Tuberculosis	5	7
Liver disease	0	0
Alcohol use	55***	16
Smoker	9	3

*** $p < 0.001$.

hand. The involvement of the left hand is far lower than that reported in other studies (Loos et al., 2007). Possibly this may be because Ethiopian patients feel that involvement of the non-dominant hand is not as important.

Apart from this, our findings are generally similar to those reported from Western countries. The distribution of affected fingers is similar, with the little and ring fingers being the most common combination of fingers to be affected, and index and thumb least affected (Caroli et al., 1991; Geoghegan et al., 2004; Zerajic and Finsen, 2004). The degree of flexion contracture was particularly severe in the little and ring fingers.

We found a statistically significant association with hypertension, but not with other co-morbidities. Other studies have found a significant correlation with diabetes mellitus (Akyol et al., 2006; Frey, 1997; Geoghegan et al., 2004; Zerajic and Finsen, 2004). We also found a statistically significant association between Dupuytren's contracture and alcohol use, but not with smoking. The

association between alcohol intake and Dupuytren's contracture has been reported in other studies (Burge et al., 1997; Frey 1997; Zerajic and Finsen, 2004).

We conclude that there are more cases of Dupuytren's contracture in Ethiopia than previously thought. This might also apply elsewhere in Africa.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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References

- Akyol A, Kiylioglu N, Copcu E, Guney E, Aydeniz A. Is diabetes mellitus type 2 a risk factor for Dupuytren's contracture in the Mediterranean region? *Plast Reconstr Surg.* 2006, 117: 2105–6.
- Burge P, Hoy G, Regan P, Milne R. Smoking, alcohol and the risk of Dupuytren's contracture. *J Bone Joint Surg Br.* 1997, 79: 206–10.
- Caroli A, Zanasi S, Marcuzzi A, Guerra D, Cristiani G, Ronchetti IP. Epidemiological and structural findings supporting the fibromatous origin of dorsal knuckle pads. *J Hand Surg Br.* 1991, 16: 258–62.
- Frey M. Risks and prevention of Dupuytren's contracture. *Lancet.* 1997, 350: 1568.
- Furnas DW. Dupuytren's contractures in a black patient in East Africa. *Plast Reconstr Surg.* 1979, 64: 250–1.
- Geoghegan JM, Forbes J, Clark DI, Smith C, Hubbard R. Dupuytren's disease risk factors. *J Hand Surg Br.* 2004, 29: 423–6.
- Haeseker B. Dupuytren's disease and the sickle-cell trait in a female black patient. *Br J Plast Surg.* 1981, 34: 438–40.
- Larsen S, Krogsgaard DG, Aagaard Larsen L, Iachina M, Skytthe A, Frederiksen H. Genetic and environmental influences in Dupuytren's disease: a study of 30,330 Danish twin pairs. *J Hand Surg Eur.* 2015, 40: 171–6.
- Loos B, Puschkin V, Horch RE. 50 years' experience with Dupuytren's contracture in the Erlangen University Hospital—a retrospective analysis of 2919 operated hands from 1956 to 2006. *BMC Musculoskel Disord.* 2007, 8: 60.
- Makhlouf MV, Cabbabe EB, Shively RE. Dupuytren's disease in blacks. *Ann Plast Surg.* 1987, 19: 334–6.
- Mennen U. Dupuytren's contracture in the Negro. *J Hand Surg Br.* 1986, 11: 61–4.
- Plasse JS. Dupuytren's contractures in a black patient. *Plast Reconstr Surg.* 1979, 64: 250.
- Rosenfeld N, Mavor E, Wise L. Dupuytren's contracture in a black female child. *Hand.* 1983, 15: 82–4.
- Tsega E, Nordenfelt E, Hansson BG, Mengesha B, Lindberg J. Chronic liver disease in Ethiopia: a clinical study with emphasis on identifying common causes. *Ethiop Med J.* 1992, 30(2 Suppl): 1–33.
- Wilbrand S, Ekbohm A, Gerdin B. The sex ratio and rate of reoperation for Dupuytren's contracture in men and women. *J Hand Surg Br.* 1999, 24: 456–9.
- Zaworski RE, Mann RJ. Dupuytren's contractures in a black patient. *Plast Reconstr Surg.* 1979, 63: 122–4.
- Zerajic D, Finsen V. Dupuytren's disease in Bosnia and Herzegovina. An epidemiological study. *BMC Musculoskel Disord.* 2004, 5: 10.