

Dupuytren's disease, alcohol consumption and alcoholism

Kristján G. Gudmundsson¹, Reynir Arngrímsson² and Thorbjörn Jónsson³

¹The Health Care Centre, Blönduós, Iceland, ²Medical Genetics Unit, Faculty of Medicine, University of Iceland and ³Institute of Immunology (IMMI), The National Hospital, Oslo, Norway.

Scand J Prim Health Care 2001;19:186–190. ISSN 0281-3432

Objective – To assess the relation between alcohol consumption and Dupuytren's disease.

Design – The participants were recruited from a previous study on Dupuytren's disease carried out in 1981–82 as part of a cohort study. Men with Dupuytren's disease in the former study and a control group were invited. The groups were matched for age and smoking habits.

Settings – The study took place at the Heart Preventive Clinic in Reykjavik.

Patients – Of 244 invited participants, 193 (79.1%) responded to the invitation; 137 had Dupuytren's disease and 56 were disease-free. Participants were examined for the presence of Dupuytren's disease and answered a questionnaire about alcohol habits.

Main outcome measures – Alcoholism, alcohol consumption and signs of Dupuytren's disease.

Results – Of the Dupuytren's group, 19 (13.9%) had been treated for alcoholism or were heavy drinkers compared to 8 (14.3%) of those without Dupuytren's disease (NS). Little or moderate alcohol consumption was reported in 78.1% of the Dupuytren's patients compared to 73.2% of the controls (NS). Total abstainers from alcohol were 11 (8.0%) in the Dupuytren's group compared to 7 (12.5%) in the control group (NS).

Conclusion – Our findings do not support a positive association between the use of alcohol and Dupuytren's disease.

Key words: Dupuytren's disease, alcohol consumption, alcoholism, risk factors, etiology.

Kristján G. Gudmundsson, The Health Care Centre of Blönduós, IS-540 Blönduós, Iceland. E-mail: kristgud@isholf.is

Dupuytren's disease is characterised by fibromatous nodules in the fascia of the palms. The nodules progress with time, forming a string or fibrous cord from the nodule to the fingers. Later contraction of the nodules may lead to permanent finger contractions. The French surgeon Guillaume Dupuytren described the anatomical pathology of the disease in the *Lancet* in 1834, and also reported how to cure this condition by surgery. Since then, there has been ongoing research on the epidemiology of disease, with many indicators presumed to affect the occurrence of the disease. Very limited progress has been made in its treatment for the last one and half centuries. The disease has a family tendency, and is common in Caucasians. Up to 30–40% of elderly men are reported to have symptoms of this disease (1). Factors reported to correlate with the disease are increasing age, gender and smoking (1). For decades, there has been an ongoing discussion as to whether manual work affects the occurrence of the disease. The general opinion in the medical literature has not favoured an association between Dupuytren's disease and occupation (2). The disease has been associated with alcohol consumption in a number of studies (3–8). Nevertheless, as shown in Table I, there have been conflicting results regarding this association (9–12). The aim of the present study was to assess the association between alcohol consumption and Dupuytren's disease.

MATERIAL AND METHODS

The Reykjavik Study – general design

In 1967 a large population-based health survey was started in the Reykjavik area of Iceland (1). The main aim of this study was to investigate the epidemiology and potential risk factors of cardiovascular diseases. The participants were males born in the years 1907–34 and females born in 1908–35 with legal residence in the Reykjavik area. The study population was divided into six individual groups; A, B, C, D, E and F according to birth dates. The different groups were invited for examination up to six times during the period 1967–97. As part of the fourth phase of the Reykjavik study a survey on Dupuytren's disease was carried out in 1981–82. Altogether 2165 participants were clinically evaluated for signs of Dupuytren's disease. They were all examined by the same physician and came at random to the study.

Present study

In 1981–82 a total of 1297 men were examined for signs of Dupuytren's disease (1). Eighteen years later, as a nested case control study within the Reykjavik study, those Dupuytren's patients who could be reached from the former study (n = 122) and a control group (n = 122) were reinvited. The patients were matched in pairs for age and smoking habits according to the clinical status in 1981–82. The participants

were invited with a letter and those not responding were contacted by telephone. The same medical doctor examined all the participants and they answered a structured questionnaire about their drinking habits. The participants were directly asked about their lifelong alcohol consumption in a structured way. Initially, they were asked an open question "How would you describe your lifelong alcohol consumption?" Next, the participants were asked whether they would describe their lifelong alcohol consumption as: none, little, moderate or excessive. The final question was whether they had been treated in hospital for alcoholism. The hands were examined by the same physician and categorised as normal, stage 1 of Dupuytren's disease with palpable palmar nodule larger than 5 mm, skin tethering or fibrous cord and stage 2 of Dupuytren's disease with contracted fingers, including those operated on due to contractures.

Statistical evaluation

All calculations are based on the cross-sectional clinical observations made in 1999. Statistical significance was evaluated using the chi-squared test, and the level of significance was set at $p < 0.05$.

Table I. Review of studies on the relation between Dupuytren's disease and alcohol consumption.

Reference	Patients studied	Controls	Results
Wolfe (3) USA, 1957	Hospital patients: 55 alcoholics and 57 alcoholic cirrhosis	53 non-drinkers	Patients with chronic alcoholism without evident liver disease suffered from a greater proportion of palmar contractures than non-drinkers
Su (6) USA, 1970	Hospital patients: 130 heavy alcohol drinkers and 133 heavy drinkers with cirrhosis	142 non-alcoholics	Dupuytren's contracture significantly increased in the age group 50–60 years
Pojer (7) USA, 1972	Hospital patients: 60 alcoholics and 65 epileptics	No control group	High frequency of Dupuytren's disease in alcoholics
Houghton (10) UK, 1983	Outpatient clinic: 69 Dupuytren's patients	57 matched controls	No differences in alcohol abuse between groups
Bradlow (5) UK, 1986	Hospital patients: 64 Dupuytren's patients	89 controls	Strong association between current heavy drinking and Dupuytren's disease in males
Attali (8) France, 1987	Hospital patients: 258 patients with four types of alcohol-related and liver disorders	174 controls	High prevalence of Dupuytren's disease in alcoholic patients
Noble (11) UK, 1992	Out of hospital patients: 100 alcoholics, 82 hepatic patients and 50 bilharzia patients	100 patients from a fracture clinic	Dupuytren's disease probably associated with alcoholism (statistically not significant)
Carson (12) UK, 1993	Population study: pensioners living in a hospital	Those pensioners who did not have Dupuytren's disease	Tendency for men with higher alcohol consumption to have more Dupuytren's disease (statistically not significant)
Bergenudd (9) Sweden, 1993	Cohort study: 574 individuals 55 years of age	Reference cohort	No relation between Dupuytren's contracture and alcohol use
Burge (4) UK, 1997	Hospital patients: 222 Dupuytren's patients	222 matched controls	Moderate effect of alcohol on the development of Dupuytren's disease (relative risk = 1.9)

RESULTS

Of the 244 invited participants, 193 (79.1%) attended the study, 92 from the original Dupuytren's group in 1981–82 and 101 from the matched control group. At the follow-up clinical examination in 1999, a total of 137 participants had clinical signs of Dupuytren's disease, while 56 had no signs of the disease (Fig. 1). The mean age and smoking habits measured in pack-years were similar in both groups (Table II).

Table III indicates that 10 (7.3%) of the men with Dupuytren's disease had been treated for alcoholism and a further 9 (6.6%) were heavy drinkers compared to 6 (10.7%) and 2 (3.6%), respectively, of those with no signs of the disease (NS). Total abstainers from alcohol were 11 (8.0%) in the Dupuytren's group compared to 7 (12.5%) in the control group (NS). Furthermore, there were no differences in little or moderate alcohol consumption between the groups. No differences in alcohol consumption were found between those with only palmar nodules or fibrous cords and those who had contracted fingers or had been operated. Furthermore, a positive family history of Dupuytren's disease was not associated with excessive alcohol use (Table III).

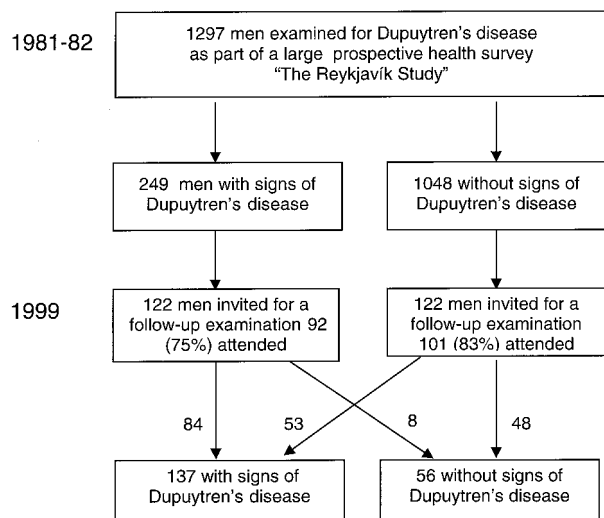


Fig. 1. Overview of study design and selection of participants for the study of Dupuytren's disease and alcohol in 1999.

Of the 101 participants who were symptom-free in 1981–82, 53 (52.5%) had developed clinical signs of Dupuytren's disease in 1999 while 48 were symptom-free (Table III). There was no association between drinking habits and the development of Dupuytren's disease.

DISCUSSION

In the present study on males in the Reykjavik area of Iceland, no difference in self-reported alcohol consumption was found between men with and without Dupuytren's disease. Thus, alcohol consumption did not seem to be related to the prevalence, incidence or staging of Dupuytren's disease. Some previous studies have associated Dupuytren's disease with the use or abuse of alcohol, but there are also other studies

showing the opposite, such as the results of the present study.

From 1917 to 1935 the use of alcohol was prohibited in Iceland, as in many other countries at that time. After legislation of alcohol, the total alcohol consumption in Iceland increased threefold from 1935 to 1970. Despite this, however, the alcohol consumption in Iceland has been reported to be the lowest per capita in Europe (13). It can generally be said that the drinking pattern in Iceland is characterised by excessive drinking, especially during weekends, with long times of sobriety in between. The prevalence of alcoholism depends on the diagnostic criteria used. Alcohol dependency has been estimated to be 1.4–1.8%, while heavy drinking has been reported to be 11.1–14.4% in the Icelandic population (14).

Studies on alcohol consumption are prone to be biased, and underreporting of alcohol consumption or recall bias are well known (15). The classical method in alcohol-related studies is to ask for units of alcohol consumed at present and to evaluate it over a period of time. For assessing lifelong alcohol consumption in males, 74 years of age, we considered such a quantified approach to be highly inaccurate because of recall bias, and therefore we chose the questionnaire described in Patients and Methods. The method used in the present study is more a qualitative than a quantitative assessment. It may be inaccurate in assessing lifelong alcohol consumption because the participants compare their drinking habits with the social environment they are most familiar with. However, it can be expected that such bias is similar in both groups. As the tendency is probably to underestimate alcohol consumption, those that classify themselves as heavy drinkers or having been treated for alcoholism are presumably in the right category.

About 30% of those invited to the initial study (the Reykjavik study) did not attend and 20% of those invited for the follow-up study did not attend the re-evaluation. Thus, there may be a selection bias in the material presented, both in the initial cohort and in the present study. However, it is difficult to interpret this effect on the results presented here. In general, one might assume that heavy drinkers and alcoholics are less likely to participate in health surveys than those with moderate or low alcohol consumption. The results from the present study can be compared to other studies. In most studies, approximately 5–10% are abstainers, 12–17% reporting heavy drinking and 70–80% reporting little or moderate drinking (16–20). In the present study, 8.3% of the participants had been treated for alcoholism, which is similar to the overall figure in Iceland, which is about 6% (15).

Table II. Relation between alcohol consumption and the presence or absence of Dupuytren's disease.

Clinical variables	Dupuytren's disease (%) ¹	
	Yes (n = 137)	No (n = 56)
Age in years; mean (SD)	74.0 (7.3)	74.0 (6.4)
Smoking in pack-years; mean (SD)	28.9 (20.5)	26.5 (21.6)
Alcohol consumption:		
● Total abstinence	11 (8.0%)	7 (12.5%)
● Little drinking	58 (42.3%)	23 (41.1%)
● Moderate drinking	49 (35.8%)	18 (32.1%)
● Heavy drinking	9 (6.6%)	2 (3.6%)
● Treatment for alcoholism	10 (7.3%)	6 (10.7%)

¹ All differences between groups are non-significant.

Table III. The relation between alcohol consumption and clinical manifestations of Dupuytren's disease at the follow-up examination in 1999.¹

Alcohol consumption	Not with Dupuytren's disease (n = 56)	Dupuytren's disease (%)			Positive family history (n = 39)	Developed Dupuytren's disease (n = 53)
		Palmar nodules or fibrous cords (n = 80)	Contracted (n = 29)	Operated (n = 28)		
Total abstinence	7 (12.5%)	7 (8.8%)	2 (6.9%)	2 (7.1%)	4 (10.3%)	7 (13.2%)
Little drinking	23 (41.1%)	32 (40.0%)	15 (51.7%)	11 (39.2%)	20 (51.3%)	20 (37.7%)
Moderate drinking	18 (32.1%)	28 (35.0%)	11 (37.9%)	10 (35.7%)	11 (28.2%)	20 (37.7%)
Heavy drinking	2 (3.6%)	7 (8.8%)	1 (3.4%)	1 (3.6%)	1 (2.6%)	2 (3.8%)
Treated for alcoholism	6 (10.7%)	6 (7.5%)	0 (0.0%)	4 (14.3%)	3 (7.1%)	4 (7.5%)

¹ All differences between groups are non-significant.

We did not match for social classes in the present study, but, as mentioned in the introduction, in the medical literature Dupuytren's disease is generally not considered to be related to social classes (2). Alcohol consumption and its association with social classes is a complex issue. Some studies have found no or an inverse relation between social classes and alcoholism, while others have found a higher incidence in the lowest social class (16–20). The prevalence of Dupuytren's disease is highly related to age (1). Smoking is associated with alcohol, and smoking is also a risk factor for Dupuytren's disease (1,21). We therefore selected the control group with the same mean age and smoking habits as the Dupuytren's patients. As neither the group studied (Dupuytren's patients) nor the outcome (alcohol consumption, alcoholism) is directly and uniformly related to social classes, we concluded that matching for social classes was not indicated for the question asked in the present study.

As the incidence of Dupuytren's disease is high, 53 men who were disease-free in the initial study in 1981–82 had developed signs of Dupuytren's disease, and 8 who had mild signs of the disease in the former evaluation were not diagnosed with the disease in 1999. The mean age, smoking and drinking habits were the same in these subgroups as in the other groups studied. The eight cases with mild signs of Dupuytren's disease in the former study, and who were disease-free in 1999, might be explained by a regression of small palmar nodules.

Different findings in previous studies on the relation between alcohol consumption and Dupuytren's disease can probably be explained by differences in study design (Table I). In the older studies, some currently known risk factors of Dupuytren's disease, such as age, smoking, racial and sexual differences, were not taken into account. Most studies relating alcoholism to Dupuytren's disease have been performed on selected groups of hospitalised patients or

patients operated for finger contractures (3–8). In studies on the general or unselected population, a statistically significant association between alcohol consumption and Dupuytren's disease has not been confirmed (9–12). This difference can be explained by the Berkson bias, which indicates that those with two disorders (for example, alcoholism and Dupuytren's disease) are more likely to get medical attention than those with only one disease (22).

When evaluating a cohort of elderly males no difference was noted in alcohol consumption between men with Dupuytren's disease and disease-free controls. Thus, alcohol did not seem to be an independent risk factor for Dupuytren's disease in the present study. The study cannot answer whether there might be an interaction between smoking and alcohol in relation to Dupuytren's disease, however, as the groups were matched for smoking habits. In conclusion, the results of the present study do not support the theory that there is a positive association between the use or abuse of alcohol and the occurrence of Dupuytren's disease.

ACKNOWLEDGEMENTS

The authors thank Dr. Nikulás Sigfússon and the Icelandic Heart Association for help in carrying out this study. We also thank Dr. Kristinn Tómasson for helpful advice in writing the paper. The Icelandic Research Council and the Icelandic family physicians research fund supported the study.

REFERENCES

1. Gudmundsson K, Arngrimsson R, Sigfússon N, Björnsson A, Jónsson T. Epidemiology of Dupuytren's disease: clinical, serological, and social assessment. The Reykjavík study. *J Clin Epidemiol* 2000;53:291–6.
2. Hueston JT, Seyfer AE. Some medicolegal aspects of Dupuytren's contracture. *Hand Clin* 1991;7:617–32.
3. Wolfe SJ, Summerskill WHJ, Davidson CS. Thickening and contraction of the palmar fascia (Dupuytren's contrac-

- ture) associated with alcoholism and hepatic cirrhosis. *N Engl J Med* 1956;255:559–63.
4. Burge P, Hoy G, Regan P, Milne R. Smoking, alcohol and the risk of Dupuytren's contracture. *J Bone Joint Surg* 1997;79B:206–10.
 5. Bradlow A, Mowat AG. Dupuytren's contracture and alcohol. *Ann Rheum Dis* 1986;45:304–7.
 6. Su CK, Patek AJ. Dupuytren's contracture. Its association with alcoholism and cirrhosis. *Arch Intern Med* 1970;126:278–81.
 7. Pojer J, Radivojevic M, Williams TF. Dupuytren's disease. Its association with abnormal liver function in alcoholism and epilepsy. *Arch Intern Med* 1972;129:561–6.
 8. Attali P, Ink O, Pelletier G, Vernier C, Jean F, Moulton L, et al. Dupuytren's contracture, alcohol consumption, and chronic liver disease. *Arch Intern Med* 1987;147:1065–7.
 9. Bergenudd H, Lindgarde F, Nilsson BE. Prevalence of Dupuytren's contracture and its correlation with degenerative changes of the hands and feet and with criteria of general health. *J Hand Surg* 1993;18B:254–7.
 10. Houghton S, Holdstock G, Cockerell R, Wright R. Dupuytren's contracture, chronic liver disease and IgA immune complexes. *Liver* 1983;3:220–4.
 11. Noble J, Arafa M, Royle SG, McGeorge G, Crank S. The association between alcohol, hepatic pathology and Dupuytren's disease. *J Hand Surg* 1992;17B:71–4.
 12. Carson J, Clarke C. Dupuytren's contracture in pensioners at the Royal Hospital Chelsea. *J R Coll Phys Lond* 1993;27:25–7.
 13. Helgasson T. Alkoholmisbrugets epidemiologi (The epidemiology of alcohol abuse). English summary. *Nord Med* 1984;99:290–3.
 14. Helgasson T. A. fengisneysluvenjur og einkenni um misnotkun og 1984 (Alcohol use and signs of alcohol abuse 1974 and 1984). *Icelandic Med J* 1988;74:129–36.
 15. Tómasson K. Psychiatric comorbidity among treatment seeking alcoholics. Importance for course and treatment (dissertation). Oslo: University of Oslo, 1998.
 16. Borrell C, Dominguez-Berjon F, Pasarin MI, Ferrando J, Rohlf I, Nebot M. Social inequalities in health related behaviours in Barcelona. *J Epidemiol Community Health* 2000;54:24–30.
 17. Halldin J. Alcohol consumption and alcoholism in an urban population in central Sweden. *Acta Psychiatr Scand* 1985;71:128–40.
 18. Wohlfarth T, van den Brink W. Social class and substance use disorders: The value of social class as distinct from socioeconomic status. *Soc Sci Med* 1998;47:51–8.
 19. Vaillant G. The natural history of alcoholism revisited. Boston: Harvard University Press, 1995.
 20. Van Oers JM, Bongers IM, Van de Goor LA, Garretsen HF. Alcohol consumption, alcohol related problems, problem drinking and socioeconomic status. *Alcohol Alcohol* 1999;34:78–88.
 21. Doll R, Peto R, Hall E, Wheatley K, Gray R. Mortality in relation to alcohol: 13 years' observation on male British doctors. *BMJ* 1994;309:911–8.
 22. Berkson J. Limitation of the application of fourfold table analysis to hospital data. *Biometrics Bull* 1946;2:47–53.