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A STUDY OF THE REPEATABILITY OF THE DIAGNOSIS OF DUPUYTREN'S CONTRACTURE AND ITS PREVALENCE IN THE GRAMPIAN REGION

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200 consecutive geriatric patients over 60 years of age (100 men and 100 women) were examined for signs of Dupuytren's contracture and questioned about certain risk factors thought to be associated with the disease. Each patient was examined, independently, by two orthopaedic surgeons. The diagnosis of Dupuytren's contracture was established by the finding of a thickening in the palm fixed to the palmar fascia as a nodule or band. However each patient was also examined for skin tethering, flexion contractures of digits and knuckle pads. The results were then analysed and a Kappa test performed on the data to assess the inter-observer variability in eliciting the signs of Dupuytren's contracture. Using the Kappa test agreement between the two observers was found to be, on average, 1.0 for observing flexion contractures, 0.8 for observing skin tethering, 0.7 for observing palmar nodules and 0.7 for observing knuckle pads. The two observers both made the diagnosis of Dupuytren's contracture in 21% of women and 39% of men. These figures are high compared with previously published data from other centres and confirm the locally held belief that Dupuytren's contracture is particularly prevalent in North-east Scotland.

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It is reputed in legend that the MacCrimmons, who ran the College of Bagpiping from the 15th to the 18th century, had a high incidence of Dupuytren's contracture which prevented them from playing the pipes in later life. The disease became known as "the curse of the MacCrimmons" a term still in common usage today (Elliot, 1988). Surgeons working in the Grampian area still believe that there is a high prevalence of Dupuytren's contracture in this region of North-east Scotland. It is therefore assessed in this study. The diagnosis of Dupuytren's contracture is made on clinical grounds and depends on the surgeon's subjective observation of the presence of palmar nodules or cords. Hence this study also examines the inter-observer repeatability of the diagnosis.

METHOD

100 consecutive male and 100 consecutive female patients on geriatric wards in Aberdeen hospitals were examined independently by two orthopaedic surgeons. All patients were over 60 years old and had been admitted for reasons unrelated to hand pathology. The hands and feet were examined for the presence of the following signs:

1. Palmar or plantar lesion (either band or nodule).
2. Flexion contracture of a digit.
3. Skin tethering of the palm.
4. Knuckle pad.

The presence of a palmar nodule or cord was considered to be diagnostic of Dupuytren's contracture. Each of the physical findings was recorded as:

- (a) "Yes" for the definite lesion.
- (b) "No" for its absence.
- (c) "Maybe" when there was doubt.

Their age and occupation were recorded and attempts were made to identify possible risk factors, including diabetes (Noble et al, 1984), epilepsy (James, 1969) and alcoholism (Pojer et al, 1972). In addition, symptomatic osteoarthritis and the occurrence of osteoporosis-related fractures were noted.

Statistical method

The Kappa statistic was employed as the measure of agreement for the recording of the physical signs. This is a chance corrected index of agreement. Kappa (K) was calculated as follows:

$$K = \frac{Pd - Pe}{1 - Pe}$$

Where:

Pd is the total proportion of observed agreement.
Pe is the total proportion of chance agreement.

The Kappa value is such that 1 denotes perfect agreement and 0 denotes total disagreement.

RESULTS

Agreed observations of the clinical signs of Dupuytren's contracture are recorded in Table 1. Agreement was high in all four observations (Table 2). It was perfect where there was a flexion contracture and least where knuckle pads were present. The agreed prevalence of Dupuytren's contracture (palmar nodules observed in either hand) was 39% for men and 21% for women. No signs of Dupuytren's disease were found in any of the feet. There was no statistically significant increase in any of the above-mentioned risk factors in the Dupuytren's contracture group, compared to the group without Dupuytren's.

Table 1—Number of agreed observations of the clinical signs of Dupuytren's contracture in 200 patients recorded by two independent observers

| | Observer 1 | | | | | | Observations | Observer 2 | | | | | | |
|------------|------------|----|----|--------|----|----|--------------|---------------------|----|----|--------|----|----|----|
| | Male | | | Female | | | | Male | | | Female | | | |
| | Y | N | M | Y | N | M | | Y | N | M | Y | N | M | |
| Observer 1 | Y | 27 | 4 | 0 | 29 | 1 | 1 | Palmar nodule | 12 | 4 | 4 | 15 | 5 | 2 |
| | N | 1 | 50 | 2 | 0 | 53 | 0 | | 0 | 63 | 0 | 0 | 54 | 2 |
| | M | 3 | 8 | 5 | 6 | 3 | 7 | | 2 | 6 | 7 | 6 | 4 | 12 |
| | Y | 15 | 1 | 2 | 11 | 3 | 1 | Skin tethering | 7 | 2 | 0 | 10 | 1 | 0 |
| | N | 1 | 77 | 0 | 2 | 80 | 0 | | 0 | 88 | 1 | 4 | 81 | 1 |
| | M | 1 | 1 | 2 | 0 | 1 | 2 | | 1 | 0 | 1 | 1 | 0 | 2 |
| | Y | 15 | 0 | 0 | 18 | 0 | 0 | Flexion contracture | 1 | 0 | 0 | 1 | 0 | 0 |
| | N | 0 | 85 | 0 | 0 | 82 | 0 | | 0 | 99 | 0 | 0 | 99 | 0 |
| | M | 0 | 0 | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |
| | Y | 4 | 0 | 0 | 3 | 0 | 0 | Knuckle pads | 1 | 0 | 0 | 2 | 0 | 0 |
| | N | 1 | 91 | 1 | 1 | 95 | 1 | | 1 | 98 | 0 | 1 | 96 | 1 |
| | M | 0 | 0 | 3 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 | 0 | 0 |

Y = yes, lesion present.
 N = no, lesion absent.
 M = may be, lesion not definitely present.

Table 2—Kappa values for 100 male and 100 female patients examined for the signs of Dupuytren's contracture by two independent observers

| Right | Male | | Female | |
|-------|----------------------------|-------------|-------------|-------------|
| | Observation | (K average) | Observation | (K average) |
| 1.00 | Flexion contractures (1.0) | 1.00 | 1.00 | 1.00 |
| 0.829 | Skin tethering (0.8) | 0.759 | 0.791 | 0.748 |
| 0.681 | Palmar nodule (0.7) | 0.809 | 0.626 | 0.809 |
| 0.867 | Knuckle pads (0.7) | 0.741 | 0.662 | 0.659 |

However men who had had osteoporosis-related fractures were found to have a significantly higher incidence of Dupuytren's contracture than men without a history of fracture ($P < 0.02$). The prevalence did not appear to change with age in this geriatric population (Table 3). The Grampian figures for male prevalence are consistently higher than reports from other areas (Table 4).

DISCUSSION

We have shown that there is a high agreement between two independent observers making the diagnosis of Dupuytren's contracture especially when skin tethering is present. It is perfect when there is a flexion contracture, but when examining for palmar nodules, both examiners agreed on only 76% of occasions, with an average Kappa value of 0.7. This might explain the variation in reported prevalences from different geographical areas.

Our figures suggest that there is a genuine high prevalence of men with Dupuytren's contracture in the

Table 3—Age-related prevalence of Dupuytren's contracture in the Grampian region

| Age group | Sex | No. seen | No. with DC | Percentage |
|------------|-----|----------|-------------|------------|
| 60-69 | M | 16 | 7 | 44% |
| | F | 14 | 2 | 14% |
| 70-79 | M | 29 | 9 | 31% |
| | F | 28 | 4 | 14% |
| 80-89 | M | 49 | 19 | 39% |
| | F | 50 | 11 | 22% |
| 90 & above | M | 6 | 4 | 67% |
| | F | 8 | 4 | 50% |

Grampian region. Even with a critical inter-observer assessment, the figures are considerably higher than in other parts of the UK and slightly higher than in Norway. We found no increased incidence of risk factors to explain the high Grampian prevalence. This study supports the view that a single gene (Ling 1963), possibly Viking, is responsible for the MacCrimmon's curse. Its relationship to osteoporotic fractures has yet to be explained.

We have found that agreement on the diagnosis of Dupuytren's contracture between two doctors was only perfect when made on the basis of the presence of flexion contracture (Fig 1). Only 18 men and 1 woman had a flexion contracture. There is better agreement when the diagnosis is made from skin tethering (Fig 2) than on the presence of palmar nodules. Taking skin tethering as the basis for diagnosis would also avoid confusing a Dupuytren's nodule with other palmar lesions such as lipoma, inclusion dermoids, vascular abnormalities, callosities and foreign bodies. It would however understate the prevalence. These observations should be taken into account when designing further studies on the prevalence of Dupuytren's contracture and its risk factors.

Table 4—Comparison of the prevalence of Dupuytren's contracture in Grampian with previously reported series. The Norwegian and Edinburgh populations were drawn from the community, whereas the Japanese and Lancastrian populations were drawn from old people's homes. In all cases the diagnosis was made on the presence of palmar nodules

| Age | Sex | Grampian | Norway | Edinburgh | Japan | Lancaster |
|-------|-----|----------|-------------------|--------------|-------------------|---------------|
| 60-69 | M | 44% | 24% | | 18% | |
| | F | 14% | 4% | | 12% | |
| 65-74 | M | | | 26% | | 17% |
| | F | | | 18% | | 11% |
| 70-79 | M | 31% | 35% | | 19% | |
| | F | 14% | 15% | | 6% | |
| 75-84 | M | | | 29% | | 21% |
| | F | | | 17% | | 10% |
| 80-89 | M | 39% | 27% | | 23% | |
| | F | 22% | 21% | | 12% | |
| | | | (McFarlane, 1990) | (Ling, 1963) | (McFarlane, 1990) | (Early, 1962) |

In Australia—60 years and over (Hueston, 1960): Males—22.8%; females—22.46%.
In London—Average age 73 years (Smith, 1884). 10% with DC (males and females).



Fig 1 The hand of a man with Dupuytren's contracture. He has palmar skin tethering and a flexion contracture.

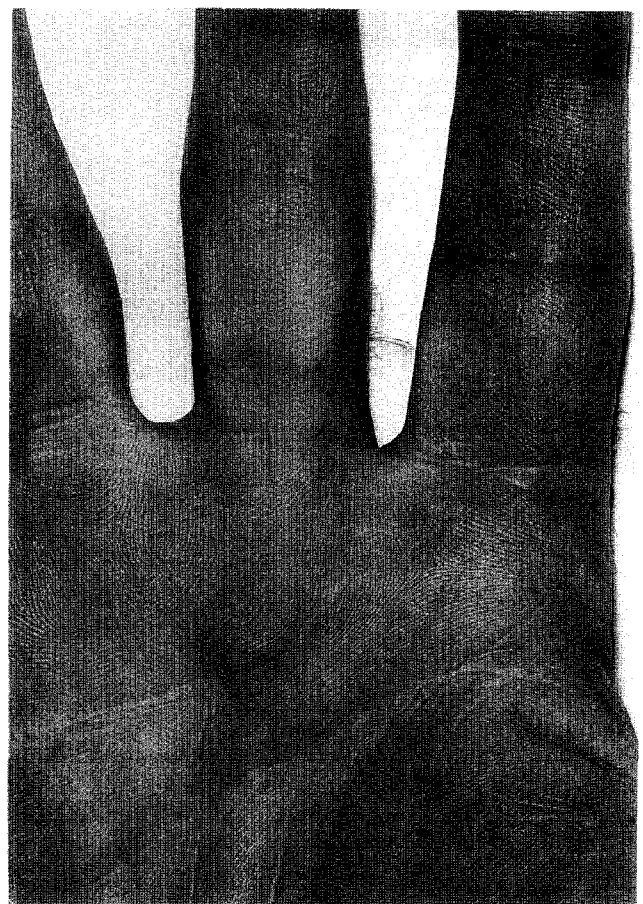


Fig 2 The hand of a man with Dupuytren's disease. He has palmar skin tethering but no flexion contracture.

References

- EARLY, P. F. (1962). Population studies in Dupuytren's contracture. *Journal of Bone and Joint Surgery*, 44B: 3: 602-613.
- ELLIOT, D. (1988). The early history of contracture of the palmar fascia. *Journal of Hand Surgery*, 13B: 3: 246-253.
- HUESTON, J. T. (1960). The incidence of Dupuytren's contracture. *Medical Journal of Australia*, 2: 999-1002.
- JAMES, J. I. P. (1969). The relationship of Dupuytren's contracture and epilepsy. *Hand* 1: 47-9.
- LING, R. S. M. (1963). The genetic factor in Dupuytren's disease. *Journal of Bone and Joint Surgery*, 45B: 4: 709-718.
- McFARLANE, R. M. In McFarlane, R. M., McGrouther, D. A. and Flint, M. H. (Eds) *Dupuytren's Disease: Biology and Treatment*. Edinburgh, Churchill Livingstone, 1990: 242-244.
- NOBLE, J., HEATHCOTE, J. G. and COHEN, H. (1984). Diabetes mellitus in the aetiology of Dupuytren's disease. *Journal of Bone and Joint Surgery*, 66B: 3: 322-325.
- POGER, J., RADIVOJEVIC, M. and WILLIAMS, T. F. (1972). Dupuytren's disease: its association with abnormal liver function in alcoholism and epilepsy. *Archives of Internal Medicine*, 1294: 561-566.
- SMITH, N. (1884). Seventy cases of Dupuytren's contracture of the fingers. *British Medical Journal*, March 29: 603-604.

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