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DUPUYTREN'S DISEASE IN FRANCE – 1831 TO 2001 – FROM DESCRIPTION TO ECONOMIC BURDEN

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We recorded all elective admissions for Dupuytren's disease from the French National Hospital Database. We used the data from first hospitalizations to calculate the 2001 hospitalization rates for this condition and determine geographical differences between different regions of France. We also calculated the hospital costs of treating admissions with this disease. Fourteen thousand eight hundred and sixty hospitalizations for Dupuytren's disease were reported in France in 2001, of which 93% were for a first treatment. The disease was mostly present in men and was mostly managed by surgical fasciectomy. Most operations were carried out in private hospitals, with a mean stay of 2 days. Geographical differences were found in men only. The total hospital cost for all elective admissions was 14, 179, 998 Euros, indicating the considerable financial burden to the State of treating this condition.

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INTRODUCTION

Dupuytren's disease is common in North-Western Europe (Ross, 1999). The economic and surgical burden of treating this condition has never been described previously in France, or elsewhere in Northern Europe. Therefore, we conducted a retrospective analysis of the hospital burden of surgery for this condition for a year, based on the data of the French National Hospital Database in 2001.

MATERIALS AND METHODS

Hospital admissions were extracted from the French National Hospital Database. According to the French Health System Organization and Law, each physician has to declare all diagnoses (one obligatory primary diagnosis, with or without associated diagnoses) and procedures performed during the hospitalization of each patient managed in a private or public hospital, using the codes of the International Classification of Disease, 10th revision (ICD-10), and the French Catalogue of Procedures (Catalogue des Actes Médicaux), respectively. We present here these data. We were unable to determine their accuracy because this database was anonymized prior to analysis.

We selected all elective admissions of men and women of 46 years of age or over in France in 2001 for Dupuytren's disease, as indicated by the code for primary diagnosis of each admission (ICD-10 codes: M72.0, M72.00, M72.04 and M27.09). These numbered 15,392 hospital episodes in all. Patients over 45 years old only were included as the number of hospitalizations in younger people represented less than 7% of all hospitalizations for this disease: 1% ($n = 249$) in people aged less than 35 years and 6% ($n = 968$) in people aged from 35 to 45 years.

Of all extracted admissions (15,392), we retained only those who had codes indicating that a surgical procedure relating to Dupuytren's disease had been carried out ($n = 14,860$). Four procedures were described in the catalogue, viz. needle fasciotomy, surgical fasciectomy of one finger, surgical fasciectomy of two or more fingers and re-intervention for Dupuytren's disease. "Re-intervention" means that a previous procedure has been done for this condition. We are unable to say whether the latest procedure was performed for recurrent disease at the same localization or for new disease in another localization on the same or the opposite hand. Thirteen thousand nine hundred and sixty-two patients were admitted for first treatments and 898 for repeat procedures for new or recurrent disease.

We subdivided the number of admissions in public and private hospitals for day-stay care or hospitalization greater than 24 hours according to age group (45–55, 56–65, 66–75, 76–85, ≥ 86 years), related diagnoses (non-insulin and insulin-dependent diabetes mellitus, rheumatoid arthritis, hyperlipidaemia, excessive alcohol consumption, epilepsy) and type of procedures performed (needle fasciotomy, surgical fasciectomy and repeat procedures).

We used only the admissions declared as first treatments ($n = 13,768$) to calculate the 2001 hospital rate of admission for surgery for Dupuytren's disease and the existence of geographical differences. Geographical differences were not examined for repeat procedures. We did not know if the previous procedures were performed in 2001, or in previous years, and carried out for a recurrent disease at the same localization, or for a new disease in another localization, on the same, or the opposite, hand.

The 2001 hospital rates (95% confidence interval) were calculated by dividing the number of admissions of each age group and gender by the total number of the

French population of the same age group and gender, using data from the last census of 1999. The hospital rates were expressed per 10,000 inhabitants.

To estimate the geographical differences for admissions for surgery for Dupuytren's disease, an analysis was performed on the data of the 13,553 admissions. We excluded all admissions with wrong codes for place of residence, which included 126 patients living outside France and 86 patients living in overseas districts. We compared the number of admissions in the Northwest of France with those in the Northeast, those in the Northwest with those in the Southwest, those in the Southwest with those in the Southeast, and those in the Southeast with those in the Northeast using pairwise χ^2 tests (the type I error was set to 0.01).

We calculated hospital costs (mean, standard deviation, median, minima, maxima and all costs) according to the 2005 National French List of tariffs per diagnosis-related group (DRG) for the public and private sectors and expressed these in Euros (Table 1). For public hospitals, the national tariff was based on the data of Descriptive Economics Studies of "Reference Hospitals" and, for private hospitals, on those of reimbursement by Social Security. The French Health Care System is currently changing, so we decided to use the new available tariffs to calculate the hospital costs.

RESULTS

Table 2 shows the characteristics of all hospitalizations for surgery for Dupuytren's disease. The mean (SD) duration of hospital stay for longer than 24 hours was 2.3 ± 1.9 days. Dupuytren's disease occurred more

commonly in men, was managed mostly in the private sector and was treated mostly by fasciectomy. Six per cent (898/14,200) of these hospitalizations were reported as a re-intervention.

For first admissions with this diagnosis, we calculated the 2001 hospital rates of admission. These are recorded in Table 3.

When we analysed the geographical differences of first treatments for Dupuytren's disease (Table 4), we found significantly more admissions in men in the Northwest of France compared to the Northeast ($P < 0.001$) and in the Northwest compared to the Southwest ($P < 0.001$). These findings were only for men.

The mean \pm standard deviation (median [minima; maxima]) hospital costs are $707\text{€} \pm 234\text{€}$ (543€ [574€ ; $2,727\text{€}$]) and $1,795\text{€} \pm 899\text{€}$ ($1,227\text{€}$ [$1,227\text{€}$; $15,998\text{€}$]) for private and public hospitals, respectively. The total hospital costs were $14,179,988\text{€}$, 57% being payments to private hospitals.

DISCUSSION

This is the first attempt to evaluate the number of elective admissions and the hospital costs in France for surgery for Dupuytren's disease. It was carried out using the French National Database. No similar information is available in the published literature in France or in any other European country. Other recent epidemiological studies are available, but their methodology is different from this study (Finsen et al., 2002; Gudmundsson et al., 2000; Zerajic and Finsen, 2004). Although these studies were prospective, they were carried out in a specified geographical area of a country,

Table 1—French 2005 hospital tariff for surgical management of Dupuytren's disease

2001 DRG	2005 DRG	Public care duration of stay (days): 2005 tariff (€)	Private care duration of stay (days): 2005 tariff (€)
Hospitalization <48 hours			
769	24C16Z	1,227	574
Hospitalization \geq 48 hours with severe co-morbidities			
357	08C01S	2–6 days: 5,683 7–58 days: 11,368 > 58 days: 11,367.54 + 366 per additional day	2–58 days: 4,181 > 58 days: 4,181 + 161 per additional day
Hospitalization \geq 48 hours without (A) and with (B) co-morbidities			
357	08C18V (A)	2–7 days: 2,298 > 7 days: 2,298 + 571 per additional day	2–12 days: 993 > 12 days: 993 + 25 per additional day
	08C18W (B)	2–18 days: 4,361 > 18 days: 4,361 + 442 per additional day	2–3 days: 628 3–18 days: 1,259 > 18 days: 1,259 + 161 per additional day

DRG (diagnosis related-group): 6th and 9th version of the French DRG classification used in 2001 and 2005, respectively. The difference of tariff between public and private care is explained by the fact that physicians' honoraries in private practice were not counted for the tariff in private hospitals.

Table 2—Descriptive data of all hospitalizations for surgery for Dupuytren's disease in France in 2001 (n = 14,860)

	Public care	Private care	All hospitalizations
Number of hospitalizations	3,375	11,485	14,860
Number of day-stay episodes/hospitalization > 24 h	1,284/2,091	6,094/5,391	7,378/7,482
Women/men	559/2,816	2,184/9,301	2,743/12,117
Age group	810	2,674	3,484
46–55 years	1,049	3,614	4,663
56–65 years	1,107	3,812	4,919
76–85 years	383	1,274	1,657
≥86 years	26	111	137
Number of hospitalizations with declared associated diagnosis*	908	5,063	6,879
Number of associated diagnoses	1,765	10,064	11 829
NIDDM	88	543	631 (5%)
IDDM	39	127	196 (2%)
Rheumatoid arthritis	3	17	20 (0.2%)
Hyperlipidaemia	78	738	816 (7%)
Alcohol	71	135	206 (2%)
Epilepsy	19	96	115 (1%)
<i>Number of procedures</i>			
(a) Primary surgery	3,159	11,041	14,200
Needle fasciotomy	382	1,264	1,646 (12%)
Surgical fasciotomy			12,554 (88%)
1 finger	1,572	4,824	6,396
≥2 fingers	1,205	4,953	6,158
(b) Re-intervention	252	646	898
Needle fasciotomy	2	0	2
Surgical fasciotomy			
1 finger	11	90	101
≥ 2 fingers	19	107	126
Not specified	220	449	669

NIDDM, non-insulin-dependent diabetes mellitus; IDDM: insulin-dependent diabetes mellitus.

*At least one associated diagnosis for each hospitalization.

viz. Reykjavik and its surroundings (Gudmundsson et al., 2000), northern Norway (Finsen et al., 2002), and Bosnia and Herzegovina (Zerajic and Finsen, 2004), with a random selection of individuals and described prevalent data; therefore, these studies are not comprehensive for a whole country.

Our study showed that Dupuytren's disease occurred commonly in men aged over 45 years, was managed mostly in private hospitals with a short duration of stay and was treated mostly by surgical fasciotomy, rather than by needle fasciotomy. Geographical differences of

hospital admissions for first treatment for surgery were observed in men only.

The management in private hospitals is not a surprise finding, because French patients can choose their physician and the type of hospital (public or private) to do their operation. This type of surgery does not require a complex medical structure and can be organized and performed as efficiently in private as in public hospitals.

Our methodology has several limitations. First, we analysed only elective admissions for surgery for Dupuytren's disease in 2001. The number of patients actually treated in France for Dupuytren's disease during this year is greater than this as some patients were treated as out-patients or as ambulatory day cases by needle fasciotomy under local anaesthetic. These patients were managed by rheumatologists in the early stage of their disease. We have no information on these cases in our National Database, which describes hospital admissions only. As the French Health Care System is currently changing, these types of data might be evaluated in the future. This is, obviously, less costly to society. Indeed, the 2005 tariff for needle fasciotomy performed during an out-patient visit is 37 and 65 Euros when the procedure is performed on one side only or on both sides, respectively. However, cases treated in this way would add to the total cost estimated in this paper, even if each of these fasciotomies cost much less per patient.

Secondly, Dupuytren's disease occurs mainly in middle-aged and elderly people. Therefore, we selected only hospitalizations in people aged over 45 years in this study. In our data, hospitalizations in younger people accounted for 7% of all hospitalizations for this disease (n = 1217). Again, and for this reason, the estimated cost in this paper is an underestimate of the total operative cost of Dupuytren's disease.

Thirdly, we might have underestimated the number of associated diagnoses and the number of re-interventions for Dupuytren's disease. As each physician has to declare all diagnoses (one obligatory primary diagnosis with or without associated diagnoses) and procedures performed during the hospitalization, some of the associated diagnosis might be forgotten.

Fourthly, data were entered anonymously, so we were unable to check their reliability by reviewing medical records and cannot tell whether a rheumatologist or a surgeon managed these patients, especially in the case of needle fasciotomy.

Lastly, the surgical details of management of Dupuytren's disease that can be extracted from the ICD-10 code in our National Database are limited. For example, the stage of disease is not coded and, therefore, we can neither assess the type of surgery performed relative to the stage of disease, nor can we define whether a re-admission was for recurrent or new disease.

Nevertheless, these data emphasize the economic burden of this disease in France. It is likely that it is a

Table 3—Rates of first hospitalization in 2001 in France for surgery for Dupuytren's disease, standardized by age and gender per 10,000 inhabitants (n = 13,768)

Age group	Women		Men	
	Rate	95% CI	Rate	95% CI
46–55	1.0 (398/3,985,706)*	0.9–1.1	7.0 (2,760/3,963,678)*	6.7–7.2
56–65	2.6 (719/2,790,500)*	2.4–2.8	13.6 (3,612/2,646,186)*	13.2–14.1
66–75	3.2 (927/2,859,393)*	3.0–3.5	16.0 (3,660/2,284,992)*	15.5–16.5
76–85	2.7 (483/1,760,802)*	2.5–3.0	9.9 (1,084/1,096,853)*	9.3–10.5
≥86	0.7 (61/865,963)*	0.5–0.9	2.0 (64/362,211)*	1.5–2.4

CI: confidence interval.

*Number of admissions divided by the population in the same age group and gender.

Table 4—Geographical hospital rates for surgery for Dupuytren's disease in 2001 standardized on age and gender per 10,000 inhabitants (n = 13,768)

Age group	Women		Men	
	Rate	95% CI	Rate	95% CI
Northwest	2.1	2.0–2.3	11.5	11.2–11.9
Northeast	2.1	2.0–2.2	10.4	10.1–10.8
Southwest	1.9	1.7–2.1	10.4	9.9–10.9
Southeast	2.2	2.1–2.4	10.9	10.5–11.3

CI: confidence interval.

similar financial problem for the other northern European countries. Further studies are needed to compare the results in term of efficacy, side effects and cost of treatment for Dupuytren's disease, to compare early and late surgery and first surgery versus surgery for recurrence.

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