

THE FEMALE PARAPLEGIC: A STATISTICAL SURVEY

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Summary. From November 1969 to December 1979, 1234 patients with spinal cord lesions were treated at the Henry Gabrielle Hospital. Of these 386 were from medical causes and 848 from trauma. The computer study of these cases brings out statistical differences between the sexes as the overall incidence in females is 30 per cent and even lower if one considers traumatic cases only 22.4 per cent out of the 848 cases. Furthermore, the average female paraplegic is two years older and it was noted that more females are married. In females the causes of spinal cord injuries are more frequently car accidents and suicidal falls from high places, whereas in males the causes are related to direct blows, that is sport injuries, motorcycle accidents and industrial falls.

Clinical symptoms are similar in the two groups with the exception that there is less heterotopic ossifications and fewer bladder stones in females. The duration of hospitalisation is shorter in females. A well equipped household is more important for the handicapped females than for males.

Key words: Spinal cord lesions; Epidemiology; Female paraplegics; Sexual distribution.

The Population and its Statistical Survey

THE COMPUTERIZED statistical survey of all tetraplegic and paraplegic patients admitted to the Henry Gabrielle Hospital has been carried out since the opening of the specialized wards for spinal cord lesions in November 1969 up to December 1979. The first results concerning 351 traumatic cases were presented by P. Minaire at the Annual Scientific Meeting of the International Medical Society of Paraplegia held in Stoke Mandeville Hospital in 1977.

Castanier (1978) studied the first 783 cases with a computer, and Demolin (1981) completed this work for 1234 cases. Of these, 848 were traumatic (69 per cent) and 386 non-traumatic (31 per cent), 72.8 per cent of the patients living in the Rhône-Alpes region, 26.6 per cent from the remaining parts of France and 0.6 per cent were foreign patients.

Sex distribution

There are more men than women, the figures being 865 men (70 per cent) and 369 (30 per cent), with a ratio of 2.3 men for 1 woman. This difference is even more marked when only traumatic cases are considered, with 77.6 per cent being men, and 22.4 per cent women or 3.46 men for 1 woman. The non-traumatic cases have a ratio of 1.15 men for each woman.

The normal population ratio for the same region is nearly 1 to 1.

This male prevalence is a well known fact already reported by many authors (Table I).

TABLE I
Sex distribution of spinal cord lesions

		Females	Males	M/F ratio
Gehrig (1968)	Switzerland	93	461	4.96
Frankel (1969)	England	69	593	8.59
Jousse (1967)	Canada	123	842	6.85
Kassa (1967)	Norway	6	36	6
Key (1970)	South Africa	32	268	8.38
Kraus (1975)	California	68	252	3.7
Sutton (1973)	Australia	30	210	7.07
Tusji (1975)	Japan	11	106	9.64
DeVivo (1980)	U.S.A.	348	1517	4.35
Carter (1980)	Texas	197	967	4.8
Our study	{ Traumatic cases	190	658	3.46
	{ Medical causes	180	206	1.15
	{ Total	368	862	2.3

Age

In Table II the cases are distributed according to their age. In males there is a high incidence between the age of 15–25 years which is not so obvious in females. Kraus (1975) reported similar findings. The female's average age is two years higher and at the time of occurrence of the spinal lesion there are more married women than married men.

Aetiology and sex

There is no difference in aetiology for medical paraplegics amongst men and women but on the contrary there is a difference of aetiology for traumatic paraplegia.

As would be expected, occupational injuries occur usually in an industrial environment. High risk jobs are filled by men, therefore, the direct blow injury is more frequent in men than in women (9 per cent compared with 1.7 per cent).

The same is true for accidental falls at work, and of 92 accidents 89 were men and only three women. Of the remaining 117 falls occurring outside the working area 79 were men and 28 women (Table III). *Traffic accidents* present different data because women are equally exposed as men. But a greater number of women are injured in car collisions; 77 out of 272 total cases. Kraus (1975) drew the same conclusion. Of all traffic accidents only 0.6 per cent involve pedestrians and there is no sexual difference. Special attention must be given to motorcycle crashes. Frankel (1969) found 20.1 per cent in England and Minaire (1977) 15.4 per cent in France, much higher than in the United States (Kraus (1975) 5.3 per cent, Carter (1977) 2.9 per cent. Minaire showed a male predominance of 68 men compared with five women. In our additional study carried out for the last three years, this male predominance is less marked, a ratio

TABLE II
Age and sex distribution for
traumatic patients

Years	Male/female this study	ratio Kraus
15	1.4	1.5
15-25	4.01	3.74
25-35	3.52	4.41
35-45	4.06	4.43
45-55	3.91	8
55-65	2.22	3.42
over 65	1.81	1.66
All cases	3.45	3.70

TABLE III
Sex and aetiology for traumatic cases

	Females	Males	M/F ratio	Total	%
Car	77	195	2.53	272	32.2
Motorcycles	14	103	7.35	117	13.8
Accidental falls	30	179	5.96	209	24.7
Suicidal falls	32	13	0.4	45	5.3
Direct blow	3	47	15.6	50	5.9
Sports	diving	0	25	25	3
	others	6	20	3.33	26
Gunshot wounds	2	19	9.5	21	2.5
Others	26	57	2.19	83	9.5
Total	190	658	3.46	848	100

of 35 men compared with nine women. This is explained by an increased number of women using motorcycles.

The overall sport incidence includes 51 cases, 45 men and six females. All 25 diving accidents were males.

Gunshot injuries are rare in Europe but more frequent in the U.S.A.: 12.3 per cent in California, Kraus (1975), and 14 per cent in Texas, Carter (1977). In our study there were 21 cases of which these were 19 men and two women.

Of particular interest are the suicidal cases as we previously reported in 1980, and which our present study confirms.

Suicidal attempt by jumping accounted for 45 injuries, 32 of the women being less than 30 years of age. Accidental falls at work caused mostly high and permanent lesions and involved men. Suicidal falls usually caused a low lesion, which tended to improve.

Level of lesions

Regarding level of lesion, there is no sex difference except a slightly higher

female incidence for the lumbosacral level, 7.6 per cent females compared with 1.9 per cent males; this is due to the high incidence of low lesions by suicidal falls. Jousse (1967) and Kraus (1975) reported a similar sexual distribution.

Complications

Both renal calculi and heterotopic ossification were marginally less frequent in the female group of traumatic urinary lesions; lithiasis was seen in 19.7 per cent of men and 11.5 per cent of women ($p < 0.05$). The statistical difference was even more marked concerning ossification, with 33.7 per cent for men and 25.7 per cent for women with $p < 0.02$.

Our statistical survey points out that urinary lithiasis is all the more frequent if the patient is a man, confined to bed for at least 3 months, and having a urinary tract infection.

Duration of hospitalisation

The duration of hospitalisation for traumatic lesions was 249 days for males and 226 days for females. Many explanations are possible: the higher incidence of lithiasis and ossification and the greater severity of post-accidental falls prolong the hospital stay of men.

Further hospitalisation due to complications have the same incidence in both sexual groups. Sooner or later about a third are re-hospitalised.

In conclusion, we wish to emphasize that a paraplegic woman's return to her household is very important and complex. In addition to special toilet and bathroom facilities a woman needs a specially equipped kitchen.

Young paraplegic mothers need special equipment and arrangements to take care of their children.

RÉSUMÉ

1234 lésions médullaires ont été traitées à l'hôpital Henry Gabrielle en 11 ans (janvier 1969—décembre 1979). L'étude statistique comparative en fonction du sexe, montre certaines différences significatives concernant la fréquence globale; 30% de femmes, taux qui chute à 22,4% quand on ne retient que les lésions traumatiques; concernant l'âge puisque les femmes sont en moyenne plus âgées de 2 ans, avec une courbe des âges plus étalée.

Les différences étiologiques sont précises: peu de chutes accidentelles et peu de chocs directs chez les femmes; ces causes sont d'ailleurs souvent en relation avec des accidents professionnels. De même, les accidents de sport et de moto touchent surtout les jeunes hommes, (avec cependant un accroissement de chutes de moto chez les jeunes femmes, au cours des dernières années). A l'opposé, les chutes suicidaires sont surtout féminines.

Les complications de lithiase rénale et d'ossifications hétérotopiques sont moins fréquentes chez les femmes dont le séjour hospitalier moyen est un peu moins long.

Enfin, l'adaptation du logement doit être plus complète pour la femme paraplégique que pour l'homme.

ZUSAMMENFASSUNG

Die Aufschlüsselung von 1234 Querschnittslähmungen am Henry Gabrielle Krankenhaus vom Januar 1969 bis zum Dezember 1979, wurde mittels eines Computers durchgeführt.

Sexuelle Unterschiede sind folgende: 30% aller Fälle sind Frauen: Nur 22,4% für die traumatischen Fälle.

Das Frauen-Durchschnittsalter ist 2 Jahre höher. Ätiologische Unterschiede sind: die Berufsunfälle, wie die Motorradunfälle, Direkte Schläge sind selten.

Im Gegensatz Verletzungen bei Selbstmordversuchen durch Sprung in die Tiefe haben bei Frauen eine günstigere Prognose.

Nierensteine und heterotopische Ossifikationen sind häufiger. Der Krakenaufenthalt der Frau ist etwas kürzer.

Die Wohnungsabänderungen, sind bei der paraplegischen Frau anspruchsvoller.

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