

## Retrospective Study for the Type of Fracture in Iraqi MS Patient

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**Abstract:** A cross-sectional study was established by collecting and analyzing data for a period of 6 months from 22-4-2021 to 1-11-2021 for the purpose of knowing the fracture risk in patients with MS patients. The analysis of data and demographic information for this study was based on the IBM SOFT SPSS 22 program, and the ages of the patients in this study ranged between 20-50 years). The logistic analysis was used in the IBM program to identify the risk factors to know the most influential and dangerous factors in this study. Outcomes risk factor of MS between patients with control Which was more frequent in the patient's group compared with the control group, where 25 patients found distributed as follows (Any fracture with a fall recorded in 7 patients with 11.7%, Any fracture without a fall recorded for five patients with 8.3%, osteoporosis with a fall recorded for six patients with 10%, and osteoporosis without a fall recorded for three patients with 5%. In this study, it is concluded there is a direct statistical relationship between multiple sclerosis and the risk of fractures.

**Keywords:** MS, IBM, fractures, patients, osteoporosis, RA, sclerosis, and fall were recorded.

### INTRODUCTION

Multiple sclerosis is a chronic disease in which the human immune system attacks the protective covering of nerve fibers in the brain and spinal cord. The manifestation of this disease may be different depending on the location and extent of damage to the nerve fibers [Compston, A. *et al.*, 2008; Zorzon, M. *et al.*, 2005].

[Josyula, S. *et al.*, 2012] Multiple sclerosis is often confused with memory impairment in the elderly, but in fact, the disease most often occurs in young people aged 20-40 years. [Weinstock-Guttman, B. *et al.*, 2004; Marrie, R.A. *et al.*, 2009] The term "multiple sclerosis" [Bazelier, M.T. *et al.*, 2011; Moen, S.M. *et al.*, 2011] In this disease, the immune system produces antibodies that attack the coverings of myelin-containing nerve fibers in the brain and spinal cord. Without this substance, nerve cells begin to send worse signals, which is why the patient experiences a variety of neurological symptoms, from mild numbness in the extremities to paralysis and loss of vision [Bazelier, M.T. *et al.*, 2012].

A significant association was found between multiple sclerosis and fracture risk. An association with a fracture of the tibia, femur, hip, pelvis, vertebrae, and humerus is suggested. In terms of gender, the risk of fracture is higher in women with multiple sclerosis [Herings, R.M. *et al.*, 1996; Pouwels, S. *et al.*, 2009].

In a recently published meta-analysis, nine studies regarding fractures and multiple sclerosis were reviewed. Data from 9 studies with 9 million

participants aged 37–65 years were analyzed, most of the subjects included were women and followed between 3–20 years, and a meta-analysis revealed a significant association between MS and fracture risk [Van Staa, T.P. *et al.*, 2000; De Vries, F. *et al.*, 2007].

[Van Den Brand, M.W.M. *et al.*, 2009] Symptoms could play a role in the origin of falls so common in patients with multiple sclerosis, and new studies are needed with a larger population as the relationship with other factors that may influence the relationship between fractures and multiple sclerosis, as the fracture is a multifactorial disease and must be taken into account [Pouwels, S. *et al.*, 2009; Herings, R.M. *et al.*, 1995]. Possible interactions between multiple sclerosis and age. Environment and disease severity (the most severe patients are those who have trouble walking and are more likely to fall) [Petty, S.J. *et al.*, 2007].

### MATERIAL AND METHOD

#### Patient's Sample

In this study, 120 patients were collected from different hospitals in Iraq, and they were distributed into two groups (60 patients' groups) (and 60 control groups). Information and demographic data were collected regarding age, fracture type, weight, and the presence of a family history of the patients.

### STUDY DESIGN

The analysis of data and demographic information for this study was based on the IBM SOFT SPSS

22 program, and the ages of the patients in this study ranged between 20-50 years).

The logistic analysis was used in the IBM program to identify the risk factors to know the most influential and dangerous factors in this study.

The person correlation tool was used to find out the type of relationship generated between MS patients and risk factors, and the presence of a positive relationship and statistical differences were estimated based on the P-value.

## STUDY PERIOD

Cooperated with the Ethics Committee for the purpose of obtaining the required licenses to conduct this study and collect data on patients; this study was conducted over a period of 6 months from 22-4-2021 to 1-11-2021.

## AIM OF STUDY

A cross-sectional study was established by collecting and analyzing data for a period of 6 months for the purpose of knowing the fracture risk in patients with MS patients.

## RESULTS

**Table 1: Mean±SD age of Study**

Statistics			
		Age of patient	Age of control
N	Valid	60	60
	Missing	0	0
Mean		36.1667	33.0167
Std. Error of Mean		1.21203	1.12659
Median		37.0000	32.0000
Std. Deviation		9.38836	8.72653
Kurtosis		-1.400	-1.048
Std. Error of Kurtosis		.608	.608
Range		30.00	30.00
Minimum		20.00	20.00
Maximum		50.00	50.00
Percentiles	10	24.1000	22.1000
	20	27.0000	24.2000
	25	28.0000	26.0000
	30	28.0000	26.3000
	40	31.8000	29.0000
	50	37.0000	32.0000
	60	40.8000	33.6000
	70	43.7000	38.0000
	75	44.0000	41.7500
	80	46.8000	43.0000
90	48.9000	45.9000	

**Table 2: Distribution of patients according to sex**

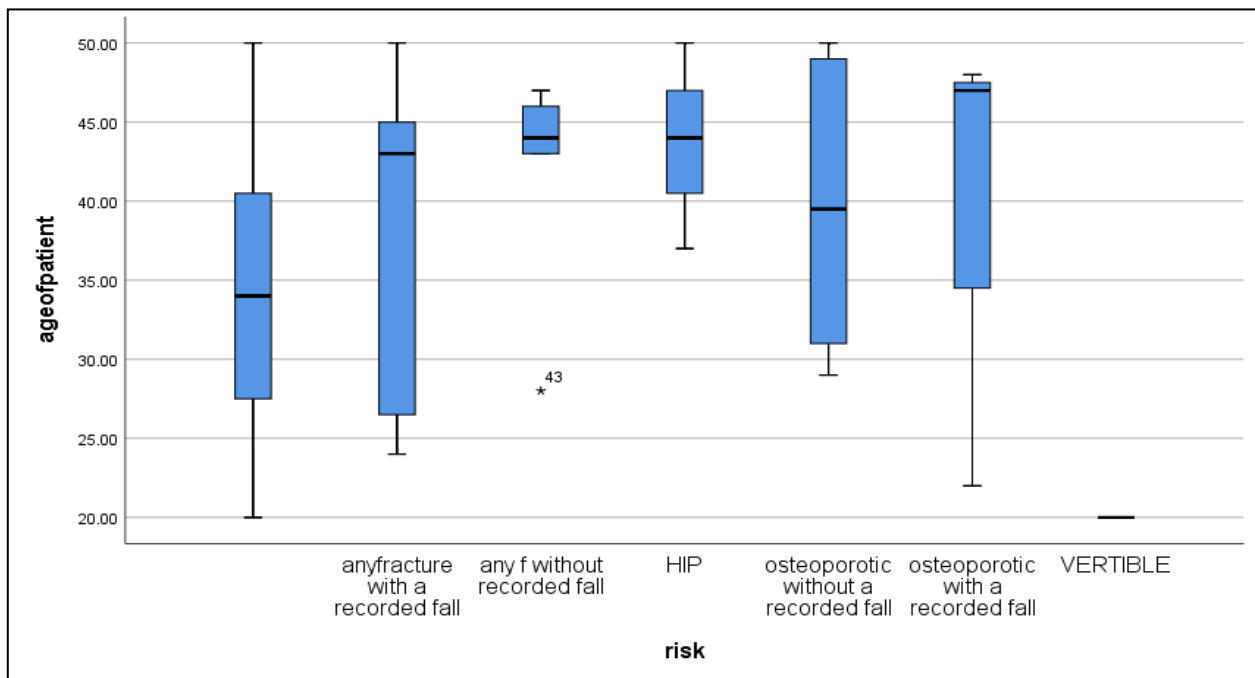
Sex of control				
	Frequency	Percent	Valid Percent	Cumulative Percent
f	20	33.3	33.3	33.3
m	40	66.7	66.7	100.0
Total	60	100.0	100.0	
Patient				
f	27	45.0	45.0	45.0
m	33	55.0	55.0	100.0
Total	60	100.0	100.0	

**Table 3:** History of comorbidity for patients

		History of comorbidity			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		34	56.7	56.7	56.7
	asthma	3	5.0	5.0	61.7
	Cerebrovascular incident	4	6.7	6.7	68.3
	fracture	8	13.3	13.3	81.7
	epilepsy	6	10.0	10.0	91.7
	RA	5	8.3	8.3	100.0
	Total	60	100.0	100.0	

**Table 4:** History of comorbidity for the control group

		VAR00006			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	68.3	68.3	68.3
	asthma	4	6.7	6.7	75.0
	Cerebrovascular incident	2	3.3	3.3	78.3
	epilepsy	2	3.3	3.3	81.7
	fracture	7	11.7	11.7	93.3
	RA	4	6.7	6.7	100.0
	Total	60	100.0	100.0	



**Figure 1:** The higher the value of the fracture risk in patients

**Table 5:** Outcome's risk factor of MS between patients with control

		Risk			
Patients		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not	35	58.3	58.3	58.3
	Any fracture with a fall recorded	7	11.7	11.7	70.0
	Any fracture without a fall recorded	5	8.3	8.3	78.3
	HIP	3	5.0	5.0	83.3
	osteoporosis with a fall recorded	6	10.0	10.0	93.3
	osteoporosis without a fall recorded	3	5.0	5.0	98.3
	VERTIBLE	1	1.7	1.7	100.0

Total	60	100.0	100.0	
<b>control</b>				
Not	54	90.0	90.0	90.0
Any fracture with a fall recorded	1	1.7	1.7	91.7
Any fracture without a fall recorded	1	1.7	1.7	93.3
HIP	2	3.3	3.3	96.7
osteoporosis with a fall recorded	1	1.7	1.7	98.3
osteoporosis without a fall recorded	1	1.7	1.7	100.0
Total	60	100.0	100.0	

**Table 6:** person correlation between patient and risk factor

<b>Correlations</b>					
			<b>MS</b>	<b>drug</b>	<b>Age</b>
Spearman's rho	MS	Correlation Coefficient	1.000	.217	.144
		Sig. (2-tailed)	.	0.001	0.001
		N	60	60	60
	Drug	Correlation Coefficient	1	0.225	.195
		Sig. (2-tailed)	.095	0.001	0.001
		N	60	60	60
	Age of patient	Correlation Coefficient	0.001	0.001	1.000
		Sig. (2-tailed)	0.001	0.001	.
		N	60	60	60

**Table 7:** Logistic regression for analysis of risk factors on patient MS

	<b>ci-95%</b>	<b>P value</b>
Age 40-50	1.45(1.3-1.6)	0.001
Drug	1.44(1.2-1.7)	<0.001
Any fracture with a fall recorded	1.5(1.23-1.8)	<0.001
Any fracture without a fall recorded	1.2(0.8-1.4)	0.0023
osteoporosis with a fall recorded	1.1(0.77-1.4)	0.045
osteoporosis without a fall recorded	0.9(0.6-1.1)	0.05

**Table 8:** History of drugs used for patients in this study

<b>VAR00017</b>					
		<b>Frequency</b>	<b>Percent</b>	<b>Valid Percent</b>	<b>Cumulative Percent</b>
Valid	Not	43	71.7	71.7	71.7
	Antiarrhythmics	8	13.3	13.3	85.0
	Antidepressants	2	3.3	3.3	88.3
	Antidiabetics	3	5.0	5.0	93.3
	Calcium	1	1.7	1.7	95.0
	Vitamin D	3	5.0	5.0	100.0
	Total	60	100.0	100.0	

**DISCUSSION**

In this study, 120 patients were collected from different hospitals in Iraq, and the statistical analysis program was based on the knowledge and analysis of the results of this study. The patients were divided into two groups, with 60 patients for each group. 36.1 + 9.3) As for the control group (33.01 + 8.72), one age group sees this group between 20 to 50 years old.

Ages were distributed according to gender for the group of patients (27 female patients with 45%

distributing) (33 male patients with 55% distributing).

Patients were distributed according to the History of comorbidity. And fracture was the most frequency in this study for eight patients with 13.3% and the least frequent asthma for three patients with 5% and the same was the case for the control group, where the fracture was the most frequent in this study for seven patients with 11.7%, □ The risk factors were more prevalent in the ages ranging between 40-50, and this is

evidence that the age factor had a significant effect in this study.

In Table 5, which shows the Outcome's risk factors of MS between patients with control, which was more frequent in the patients group compared with the control group, where 25 patients were found distributed as follows (Any fracture with a fall recorded in 7 patients with 11.7%, Any fracture without a fall recorded for five patients with 8.3%, osteoporosis with a fall recorded for six patients with 10%, and osteoporosis without a fall recorded for three patients with 5%.

By establishing a statistical relationship, it was identified in Table 6, which shows the person correlation between patient and risk factor

Where we notice that there is a direct statistical relationship between Ms patients and drugs for 60 patients at a p-value of 0.001.

A logistic regression for analysis of risk factors on patient MS was used. It was found that age had a clear effect on patients at CI-95%. 1.45(1.3-1.6) with p-value 0.001, Drug 1.44(1.2-1.7) < 0.001, Any fracture with a fall recorded, 1.5(1.23-1.8) <0.001.

The meta-analysis revealed a significant association between MS and fracture risk, and in the analysis of gender [Huot, L. et al., 2008], women with MS are more likely to have fractures, which could be explained by lower bone mass. On the contrary, no significant association was found among men with this disease [Hearn, A.P].

According to the fracture site, a significant correlation was found for fractures of the tibia, femur, hip, pelvis, vertebrae, and humerus. However, there was no significant association between multiple sclerosis and the risk of fractures of the ribs, radius, and ulna [Canalis, E. et al., 2010; Goldberg, P. et al., 1986].

Furthermore, a significantly higher number of MS-related fractures were found among those patients taking antidepressants, hypnotics, anxiolytics, anticonvulsants, and glucocorticoids. These findings suggest that special attention should be paid to MS patients receiving these medications. In addition, symptoms could play a role in the origin of falls so common in MS patients.

## CONCLUSION

In this study, it is concluded there is a direct statistical relationship between multiple sclerosis and the risk of fractures

Also, in this study, it was revealed that there was a significant increase in the use of drug therapy for women, and this negatively affected them, and they became more susceptible to fractures.

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