International Journal of Psychosocial Rehabilitation, Vol. 24, Issue 05, 2020
ISSN: 1475-7192

Lack Evidence of Renal Impairment Complaints among Multiple Sclerosis Patients

Gheyath Al Gawwam, Ahmed Emad Mohammed,
Zuhair A. Al-Johar, Ali Abdulmajid Dyab Allawi and
Faten Abdulghani Hammoudi

Abstract--- Introduction: *Multiple sclerosis MS is a demyelinated, inflammatory disease. Several researches referred that the dysfunction in non-neural tissues play a crucial role in MS disease pathogeneses.* ***Patients and methods:*** *150 patient were included in this study, the demographic data has been obtained from all patients, as well as renal function, co-morbidities, and type of MS, type of drug and bladder symptoms has been recorded.* ***Results:*** *our results showed that renal function test was follow, (mean ± SD) serum creatinine 0.9 ± 1.6, blood urea 35.2 ± 15.7 and eGFR 111.4 ± 35.2. Co-morbidities, hypertension (20) patients and diabetes (10) patients. Higher numbers of patients were diagnosed with RRMS (128) patients and lower numbers were SPMS (5) patients. Most of patients were used on Interferon-beta drug (114) patients. Generally, (55) patient were complain from incontinence bladder, (50) patient were complain from retention and (31) patients were complain from recurrent UTI.* ***Conclusion:*** *we revealed to that renal impairment may not associated with MS regarding to our finding, but MS could associate with bladder problems.*

Keywords--- *MS, Renal Impairment and Bladder Problems.*

I. INTRODUCTION

MS is an autoimmune disease of the CNS described by recurrent inflammation, neuron damage, gliosis and demyelination (1).MS currently accounts approximately 2,5 million people suffered with an approximate expense of US$ 2–3 billion\year(2).Overall, damage in MS patients impedes the potential of sections of the nervous system to communicating, resulting in variety of clinical symptoms, such as mental and often psychiatric disorders (3-5).MS is categorized into 4 distinct types, (a) Relapsing/remitting MS (RRMS), (b) secondary progressive MS (SPMS), (c) primary progressive MS (PPMS) and (d) progressive relapsing MS (PRMS) (6-8). Although trigger is not obvious, it is assumed that the actual mechanism is either immune system collapse or the myelin-producing cells defect (7).The potential explanations for this are genetics and environmental conditions as caused by a viral infection Genetics and environmental factors as caused by a viral infection are the possible reasons for this(2, 9). MS is typically diagnosed depending on the signs and symptoms which will observer, and the medical examination results that verify it(10).Numerous studies have demonstrated that patients with MS manifest multiple impairments involving neurological, musculoskeletal, gastrointestinal, ocular, behavioral and kidney disorders (5).

The bidirectional association between brain and kidneys is often defined by other researchers. However,

Gheyath Al Gawwam, Branch of Medicine, College of Medicine, University of Baghdad, Baghdad, Iraq.
Ahmed Emad Mohammed, Department of Medicine, Baghdad Teaching Hospital Medical City Complex, Baghdad, Iraq.
Zuhair A. Al-Johar, Branch of Medicine, College of Medicine, University of Baghdad, Baghdad, Iraq.
Ali Abdulmajid Dyab Allawi, Branch of Medicine, College of Medicine, University of Baghdad, Baghdad, Iraq.
Faten Abdulghani Hammoudi, Department of Laboratory, Baghdad Teaching Hospital Medical City Complex, Baghdad, Iraq.

DOI: 10.37200/IJPR/V24I5/PR2020277
Received: 18 Mar 2020 | Revised: 30 Mar 2020 | Accepted: 08 Apr 2020

pathological pathway involving, va so regulation, differences in microscopic anatomy and hormonal functions can trigger changes in chronic deterioration following neurological dysfunction and renal failure (11). In fact, Bladder symptoms include (urinary bleeding, urinary incontinence, etc.), other issues like chronic UTI have been shown to cause around 90 percent of multiple sclerosis patients (12, 13).

The aim of survey was to determine complains of renal impairment and other bladder problems among MS patients.

II. PATIENTS AND METHODS

2.1 Patients Collection and Laboratory Investigation

From January 2016 to February 2017 a cross sectional study included 150 patient, (46 male / 104 female), age ranged between (17-65) year and mean ± standard deviation (37.0 ± 10.4), has been carried out at Baghdad teaching hospital, medical city complex, Baghdad, Iraq.

The proposal has been authorized by the Baghdad teaching hospital ethical committee. Otherwise, all the patients received written consent. Inclusion criteria: age more than 15 and less than 65, patients are not on hemodialysis, patients are not taking nephrotoxic drugs, patients' diagnosis of MS is settled and are on regular treatment and patients are not in relapse (acute exacerbation).

Regarding to the MS patients, (type of MS, type of treatment, bladder symptoms, blood pressure and diabetes) were recorded. Moreover, blood samples have been collected and sent to the laboratory of outpatient department for the following parameters assessment (blood urea and serum creatinine) using (SIEMENS/Dimension RXL-MAX 224512-AX) according to manufacture protocol, as well as the general urine examination (G.U.E) has been performed for all patients. The glomerular filtration rate (GFR)has been estimated by the modification of diet in renal disease (MDRD) equation.

2.2 Statistical Analysis of Data

The statistical analysis was conducted using software (SPSS), version 20. The parameters statistic was expressed as frequency, median and mean ± SD.

III. RESULTS

According to demographic data, the renal function test among MS patients was as follow, serum creatinine level ranged between (0.5 – 1.1.0)mg/dl with mean ± SD (0.9 ± 1.6), while blood urea level raged between (15.0 – 46.0) mg/dl with mean ± SD (35.2 ± 15.7), as well as eGFR was ranged between (92.0 – 120.0) mL/min with mean ± SD (111.4 ± 35.2).

However, other co-morbidities among MS patient were recorded, 20 (13.3%) MS patient out of 150 patient were diagnosed with hypertension, 10 (6.7%) MS patients out of 150 patient were diagnosed with diabetes mellitus as appear in (Table 1).

DOI: 10.37200/IJPR/V24I5/PR2020277
Received: 18 Mar 2020 | Revised: 30 Mar 2020 | Accepted: 08 Apr 2020

Table 1: Demographic Details and Clinical Characteristics

Variables	Values
Number	150
Demographic data	
Age (years) : mean ± SD (range)	(17 – 65): 37.0 ± 10.4
Sex (male / female)	46 (30.7%) / 104 (69.3%)
Renal parameters	
Creatinine (mg/dl), mean ± SD (range)	0.9 ± 1.6 (0.5 – 1.1.0)
Urea (mg/dl), mean ± SD (range)	35.2 ± 15.7 (15.0 – 46.0)
eGFR (mL/min)	111.4 ± 35.2 (92.0 – 120.0)
Co-morbidities	
Hypertension, number (%)	20 (13.3%)
DM, number (%)	10 (6.7%)

Other variables were summarized in (Table 2). The types of were distributed as follow, 128 (85.3%) were diagnosed with Relapsing-Remitting (RR), 9 (6.0%) were presented with Progressive Relapsing (PR), 8 (5.3%) found with Primary Progressive (PP) and 5 (3.3%) appeared with Secondary Progressive (SP). According to treatment, it's noticeable 28 (18.7%) patient were used Natalizumab, 114 (76%) patient were used Interferon-beta and 8 (5.3%) patient were used Fampridine.

Regarding to bladder symptoms, results showed 34 (22.6%) MS patient appeared with no symptoms, 55 (36.7%) MS patient found with incontinence bladder, 30 (20.0%) MS patient seemed with retention and 31 (20.7%) MS patient looked with recurrent UTI.

Table 2: MS Disease Description

Variables	Values
Types of MS	
RR, number (%)	128 (85.3%)
PR, number (%)	9 (6.0%)
PP, number (%)	8 (5.3%)
SP, number (%)	5 (3.3%)
Treatment	
Natalizumab, number (%)	28 (18.7%)
Interferon-beta, number (%)	114 (76%)
Fampridine, number (%)	8 (5.3%)
Bladder symptoms	
No symptoms	34 (22.6%)
Incontinence, number (%)	55 (36.7%)
Retention, number (%)	30 (20.0%)
Recurrent UTI, number (%)	31 (20.7%)

IV. DISCUSSION

These data demonstrate no significant association between renal impairment and MS. The patients were not thought to have any renal impairment according to renal functions test (serum creatinine and blood urea).Depending on the function of the kidneys as endocrine / metabolic organ in secretory protein articulation, the kidneys display a

DOI: 10.37200/IJPR/V24I5/PR2020277
Received: 18 Mar 2020 | Revised: 30 Mar 2020 | Accepted: 08 Apr 2020

notable proximity to the CNS choroid plexus. Usually about 211 specific proteins are found in the kidneys and choroid plexus. Since choroid plexus 'physiological role in preserving the chemical stability of CSF is similar to the work of the kidneys in the blood, choroid plexus was described as the brain's' kidney(11). Calabresi et al. found that unsuspected renal impairment exists in patients with advanced MS who have not been treated with known nephrotoxic medication(14). Lawrenson et al. reported that individuals with paraplegia or neural tube defects have been shown to have a slightly elevated risk of kidney impairment comparison with the general population. They have not shown a high risk of renal failure in people with multiple sclerosis (15). Yuruktumen et al. revealed to that acute renal failure can worsen the course of MS patients and the associated external sphincter dyssynergy detrusor. Renal recovery of these patients can be supported by urinary catheterisation and complementary therapy (16).S hakir et al. observed that the risk of renal impairment in neurogenic bladder patients due to MS was low (3%) on intermediate follow-up and was not correlated with UDS parameters. Using more moderate parameters, DO has been correlated with deterioration, indicating that analysis of the effects of more vigorous DO regulation in this population may be justified (17).Various levels of the central nervous system may be affected depending on the location of focal demyelination lesions, which may also cause genitourinary system deficiency in MS. The prevalence of urinary problems in patients with MS varies from 50 to 80 percent, and most individuals complain of symptoms such as incontinence and urinary impairment that can lead to serious disability (18-21).

V. CONCLUSION

We concluded that the patients who diagnosed with MS not usually associated with renal impairment although many researches indicate that there is significant association between both diseases. On the other hand, we supposed there is an evidence between bladder problems (incontinence and retention), additionally recurrent UTI.

REFERENCES

[1] Rostami S, Emami-Aleagha M-S, Ghasemi-Kasman M, Allameh A. Cross-talks between the kidneys and the central nervous system in multiple sclerosis. *Caspian journal of internal medicine.* 2018;9(3):206.
[2] Compston A, Winedl H, Kieseier B. coles A. Multiple sclerosis Lancet. 2002;359:1221-31.
[3] Compston A, Coles A. Multiple sclerosis. Lancet (Lond, Engl) 372: 1502–1517. 2008.
[4] Compston AC, Cole A. A.(2002). Multiple sclerosis Lancet.359:1221-31.
[5] Bertelson JA, Price BH. Depression and psychosis in neurological practice. Neurology in Clinical Practice: *Principles of diagnosis and management.* 2004;1:103.
[6] Katsara M, Matsoukas J, Deraos G, Apostolopoulos V. Towards immunotherapeutic drugs and vaccines against multiple sclerosis. *Acta biochimica et biophysica Sinica.* 2008;40(7):636-42.
[7] Lublin FD, Reingold SC. Defining the clinical course of multiple sclerosis: results of an international survey. *Neurology.* 1996;46(4):907-11.
[8] Eckstein C, Bhatti MT. Currently approved and emerging oral therapies in multiple sclerosis: An update for the ophthalmologist. *Survey of ophthalmology.* 2016;61(3):318-32.
[9] Ascherio A, Munger KL. Environmental risk factors for multiple sclerosis. Part I: the role of infection. *Annals of neurology.* 2007;61(4):288-99.
[10] Ghasemi N, Razavi S, Nikzad E. Multiple sclerosis: pathogenesis, symptoms, diagnoses and cell-based therapy. *Cell Journal (Yakhteh).* 2017;19(1):1.
[11] Sathyanesan M, Girgenti M, Banasr M, Stone K, Bruce C, Guilchicek E, et al. A molecular characterization of the choroid plexus and stress-induced gene regulation. *Translational psychiatry.* 2012;2(7):e139-e.
[12] Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. Harrison's principles of internal medicine: Mcgraw-hill New York; 2012.

DOI: 10.37200/IJPR/V24I5/PR2020277
Received: 18 Mar 2020 | Revised: 30 Mar 2020 | Accepted: 08 Apr 2020

[13] Ackley B. Ladwig, GB. Nursing diagnosis handbook: An evidence-based guide to planning care 9th ed St louis, *MO: Mosby Elsevier.* 2011.
[14] Calabresi P, Austin H, Racke M, Goodman A, Choyke P, Maloni H, et al. Impaired renal function in progressive multiple sclerosis. *Neurology.* 2002;59(11):1799-801.
[15] Lawrenson R, Wyndaele J-J, Vlachonikolis I, Farmer C, Glickman S. Renal failure in patients with neurogenic lower urinary tract dysfunction. *Neuroepidemiology.* 2001;20(2):138-43.
[16] Yuruktumen A, Karcioglu O, Topacoglu H, Arslan ED. Acute renal failure associated with dysfunctioning detrusor muscle in multiple sclerosis. *Advances in therapy.* 2004;21(6):343-7.
[17] Shakir NA, Satyanarayan A, Eastman J, Greenberg BM, Lemack GE. Assessment of renal deterioration and associated risk factors in patients with multiple sclerosis. *Urology.* 2019;123:76-80.
[18] Gonor SE, Carroll DJ, Metcalfe JB. Vesical dysfunction in multiple sclerosis. *Urology.* 1985;25(4):429-31.
[19] Betts CD, D'Mellow M, Fowler CJ. Urinary symptoms and the neurological features of bladder dysfunction in multiple sclerosis. *Journal of Neurology, Neurosurgery & Psychiatry.* 1993;56(3):245-50.
[20] Gallien P, Robineau S, Nicolas B, Le Bot M-P, Brissot R, Verin M. Vesicourethral dysfunction and urodynamic findings in multiple sclerosis: a study of 149 cases. *Archives of physical medicine and rehabilitation.* 1998;79(3):255-7.
[21] Kasabian NG, Krause I, Brown WE, Khan Z, Nagler HM. Fate of the upper urinary tract in multiple sclerosis. *Neurourology and urodynamics.* 1995;14(1):81-5.

DOI: 10.37200/IJPR/V24I5/PR2020277
Received: 18 Mar 2020 | Revised: 30 Mar 2020 | Accepted: 08 Apr 2020