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Research Article

**PATTERN OF NEUROLOGICAL MANIFESTATIONS AMONG
SLE PATIENTS IN ASEER CENTRAL HOSPITAL**

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Abstract:

Background: Systemic lupus erythematosus [SLE] is one of worldwide autoimmune disorder that has a significant mortality and morbidity. Neurological manifestations are less prevalent in other systemic inflammatory and autoimmune disorders.

Aim: To assess pattern and determinants of neurological manifestations among SLE patients admitted to Aseer Central Hospital [ACH].

Methodology: A record based retrospective study was conducted by reviewing all medical records of SLE patients admitted to Aseer Central Hospital [ACH] during the period from 1994 to 2018 A total sample of 230 patients' files with complete data were reviewed and included in the study. The data were extracted using pre-structured format covering bio demographic and neurological data.

Results: A total sample of 230 SLE patients with ages ranged from 15 years to 71 years old and mean age of 35.5 ± 11.3 years old. Females constituted 93% of the sampled patients. Neurological manifestations was recorded among 23.5% of the patients. Headache was the most frequently recorded neurological complain [68.5% of patients with neurological symptoms] followed with seizures [22.2%], stroke [15.5%] while mood disturbance was the least recorded manifestation [3.7%]

Conclusions & recommendations: In conclusion, nearly one out of each four SLE patients experienced at least one type of the neurological manifestations specially headache. Neurological complaint were more common among old aged patients with long disease duration. More care for these manifestations should be paid for early diagnosis and management

Keywords: Systemic lupus erythematosus, SLE, Manifestations, Neurological signs, CNS manifestations.

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INTRODUCTION:

Health-related behavior in early life influences later risks for lifestyle-related disorders. It is therefore important to investigate health behaviors among young people. University students represent a major segment of the young adult population health-related behavior in early life influences later risks for lifestyle-related disorders. It is therefore important to investigate health behaviors among young people. University students represent a major segment of the young adult population Systemic lupus erythematosus [SLE] is one of worldwide autoimmune disorder that has a significant mortality and morbidity. [1] It's a persistent long term disorder which is more common in women. [2, 3] Among the Collagen Vascular Diseases neurological manifestations have been most commonly recognized and well-studied in Systemic Lupus Erythematosus [SLE, lupus]. Neurological manifestations are less prevalent in other systemic inflammatory and autoimmune disorders. Rheumatoid Arthritis [RA] in adults, an erosive and potentially deforming inflammatory arthritis has been associated with peripheral neuropathy, brain stem and spinal cord compression due to mass effect from pannus formation in the vertebral joints, and stroke caused by premature atherosclerotic vascular disease. [4-6] Morbidity from the disease and its treatments remain high; the outcome is highly variable, ranging from permanent remission to death. [7] There is an improvement of SLE patient's survival consistently in last decade; recently, more than 90% of SLE patients showed 5-years survival comparing to 50% in the 1950s. [8-10] The rate of mortality among SLE patients was estimated as 4.6 times higher than general population according to standardized mortality rate despite improvement of survival rate. [11] Neuropsychiatric systemic lupus erythematosus or NPSLE refers to the neurological and psychiatric manifestations of systemic lupus erythematosus. It is estimated that over half of people with SLE have neuropsychiatric involvement. [12, 13] The American College of Rheumatology has outlined 19 syndromes that are seen in NPSLE. These syndromes encompass disorders of the central and peripheral nervous systems. [14] According to 10 high-quality prospective studies, which included 2,049 SLE patients, the prevalence of NPSLE manifestations among them was 56%. Among these approximately 90% were pure CNS manifestations. The most frequent NPSLE manifestations were headache [28.3%], mood disorders [20.7%], cognitive dysfunction [19.7%], seizures [9.9%], and cerebrovascular disease [8.0%]. Neuropsychiatric symptoms can be among the earliest manifestations of SLE, and some reports

suggest up to 40% of neuropsychiatric symptoms appear during the first year of SLE diagnosis.

Although, there is Preexisting reported studies showing causes of hospitalization among SLE patients in other countries. [15, 16] Up to our knowledge, there is no similar study done before in Asir region, Saudi Arabia. Therefore, we need to investigate the causes of admission and outcome of hospitalization in our region, which will allow us to get an overview of health statement.

Prognosis is typically worse for men and children than for women; however, if symptoms are present after age 60, the disease tends to run a more benign course. Early mortality, within 5 years, is due to organ failure or overwhelming infections, both of which can be altered by early diagnosis and treatment. The mortality risk is fivefold when compared to the normal population in the late stages, which can be attributed to cardiovascular disease from accelerated atherosclerosis, the leading cause of death for people with SLE. [17-19]

METHODOLOGY:

A record based retrospective study was conducted by reviewing all medical records of SLE patients admitted to Aseer Central Hospital [ACH] during the period from 1994 to 2018 ACH is the main governmental hospital in Abha city, which is the capital of Aseer Region in KSA. A total sample of 230 patients' files with complete data were reviewed and included in the study. The data were extracted using pre-structured format. Data extracted were patients' characteristics, duration of disease, cutaneous manifestations, complications, laboratory data, and neurological manifestations.

Data analysis

After data were collected it was revised, coded and fed to statistical software IBM SPSS version 20. The given graphs were constructed using Microsoft excel software. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant. Frequency and percent were used to describe the frequency distribution of each category for different variables. Chi square / Mont Carlo exact test and Fishers exact test were used to test for the association between patients' characteristics and neurological manifestations. Exact testes were used if there are small frequencies where chi square is invalid.

RESULTS:

A total sample of 230 SLE patients diagnosed based

on American college of rheumatology [ACR] and Systemic Lupus International Collaborating Clinics [SLICC] criteria with ages ranged from 15 years to 71 years old and mean age of 35.5 ± 11.3 years old. Females constituted 93% of the sampled patients and 33.5% had the disease for less than 5 years while 28.7% had the disease for 10 years or more. Renal involvement was recorded among 10.9% of patients as nephritis and 19.1% had proteinuria [Table 1].

Figure [1] shows the prevalence of neurological manifestations among the sampled SLE patients which was recorded among 23.5% of the patients. Headache was the most frequently recorded neurological complain [68.5% of patients with neurological symptoms] followed with seizures [22.2%], stroke [15.5%] while mood disturbance was the least recorded manifestation [3.7%] [Figure 2].

As for cutaneous lupus rash [Table 2], it was clear that 38.8% of the patients had discoid lupus erythematous rash followed malar rash and oral ulcers [32.9% for each], Subacute cutaneous lupus erythematous rash/ palpable purpura or urticarial Vasculitis [25.3%], and 12.9% had no cutaneous manifestations. About 20% of the patients had only one of the neurological manifestations while only 3% had two types and 0.9% had three types [Figure 3]. Regarding manifestations, 66.1% of the patients had Arthritis and 9.6% had pleurisy or pericarditis [Figure 4].

As for laboratory findings [Table 3], 53.6% of the patients had normal hematological profile while 25.7% had leucopenia, 6.5% had leucopenia with thrombocytopenia and 3.5% had hemolytic anemia. With regard to serology, 74.3% of the patients had High titer positive ANA, 42.2% had Positive anti dsDNA, 30.4% had Antiphospholipid antibodies while 11.7% [unknown] missed data .

Table [4] shows the distribution of neurological manifestations of patients with SLE by their bio-demographic data. About 36% of patients aged 50 years or more experienced at least one of the neurological manifestations compared to 14.3% of patients below the age of 30 years with recorded statistical significance [$P=.049$]. Considering gender, neurological manifestations were recorded among 24.8% of the females compared to 6.3% of males with borderline significance [$P=.092$]. As for disease duration, 34.8% of the patients with SLE for 10 years or more experienced neurological complaints compared to 19.5% of those with disease for less than 5 years [$P=.035$]. Other biomedical data like serology, hematology were insignificantly related with neurological manifestations rate.

DISCUSSION:

After reporting results we found that neurological manifestations in female more than male as headache followed by seizure , stroke, psychosis, mood disturbance consecutively. Comparing to worldwide neurological manifestations prevalence among lupus patients we found our patients are less [our patient 23.5% versus worldwide 37-95%] [21] , considering that the age and the duration of illness is a valuable factors in appearance of these manifestations so those with long time of illness and those who have the SLE for 10 years or more are more affected than others .

CONCLUSIONS AND RECOMMENDATIONS:

In conclusion, nearly one out of each four SLE patients experienced at least one type of the neurological manifestations specially headache. Neurological complaint were more common among old aged patients with long disease duration. Irrespective it is not common but and a significant source of morbidity and mortality. More care for these manifestations should be paid for early diagnosis and management which will be reflected positively on SEL patients' quality of life and prognosis.

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Table [1]: Bio-Demographic data of patients with SLE attending ACH, Abha, Saudi Arabia

Bio-Demographic data	No	%	
Age in years	< 30 years	70	30.4%
	30-	90	39.1%
	40-	42	18.3%
	50+	28	12.2%
Gender	Male	16	7.0%
	Female	214	93.0%
Disease duration	< 5 years	77	33.5%
	5-9	87	37.8%
	10+	66	28.7%
Kidney involvement	Free	118	51.3%
	Biopsy proven nephritis	25	10.9%
	Proteinuria	44	19.1%
	Both	43	18.7%

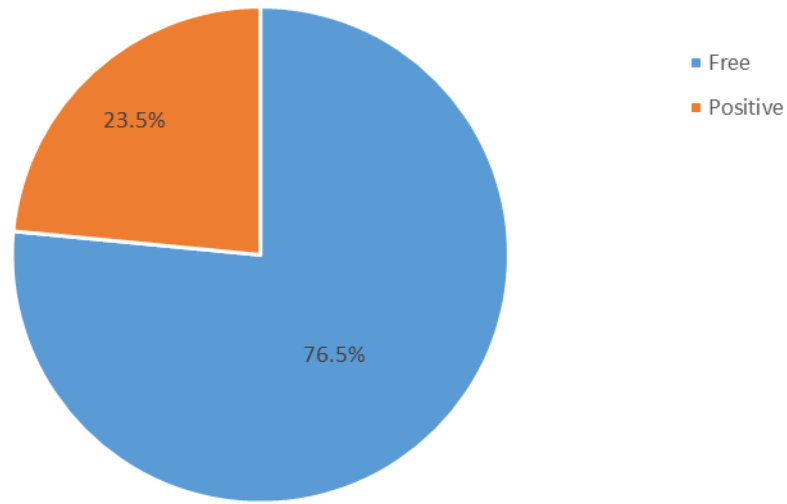


Figure [1]: Prevalence of neurological manifestations among patients with SLE attending ACH, Abha, Saudi Arabia

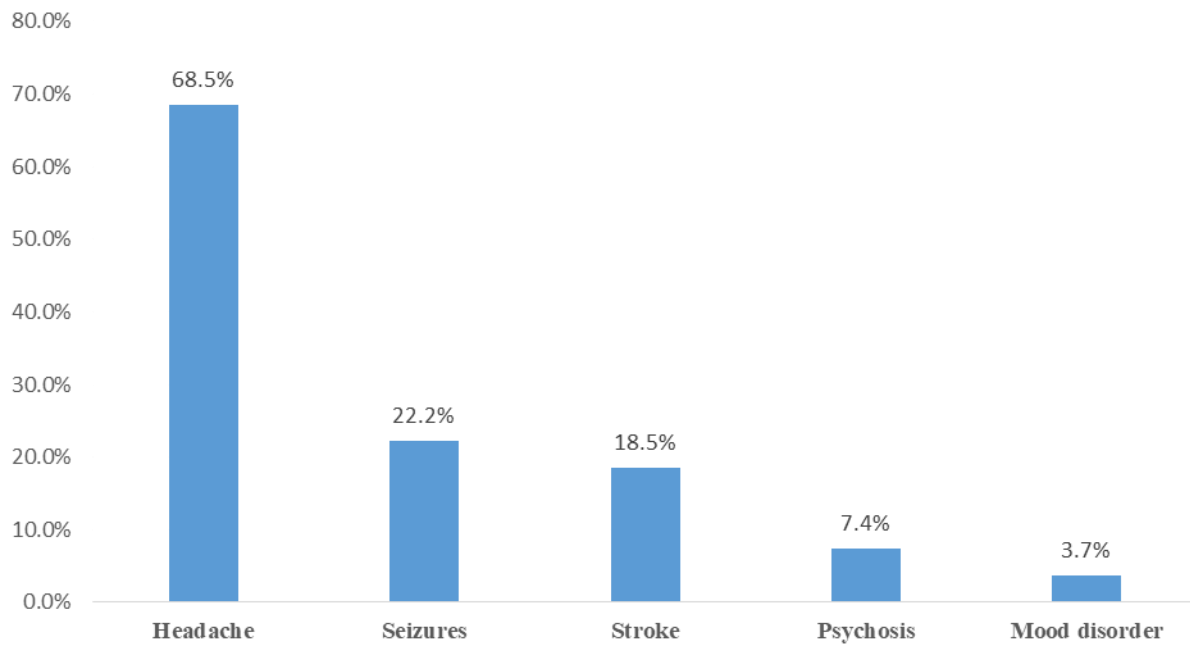


Figure [2]: Types of neurological manifestations among patients with SLE attending ACH, Abha, Saudi Arabia

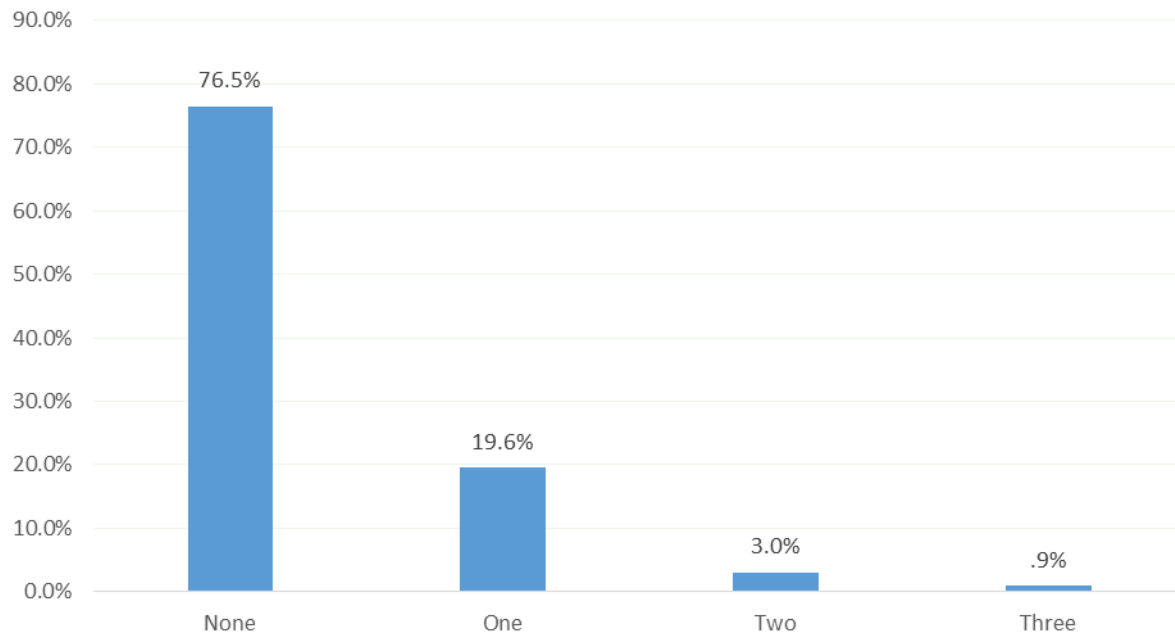


Figure [3]: Number of neurological manifestations among patients with SLE attending ACH, Abha, Saudi Arabia

Table [2]: Acute \ Subacute cutaneous lupus rash among patients with SLE attending ACH, Abha, Saudi Arabia

Acute \ Subacute cutaneous lupus rash	No	%
None	22	12.9%
malar rash	56	32.9%
Subacute cutaneous lupus erythematous rash/ palpable purpura or urticarial Vasculitis	43	25.3%
photosensitivity	23	13.5%
discoid lupus erythematous rash	30	17.6%
non-scarring frank alopecia	66	38.8%
oral/nasal ulcer	56	32.9%

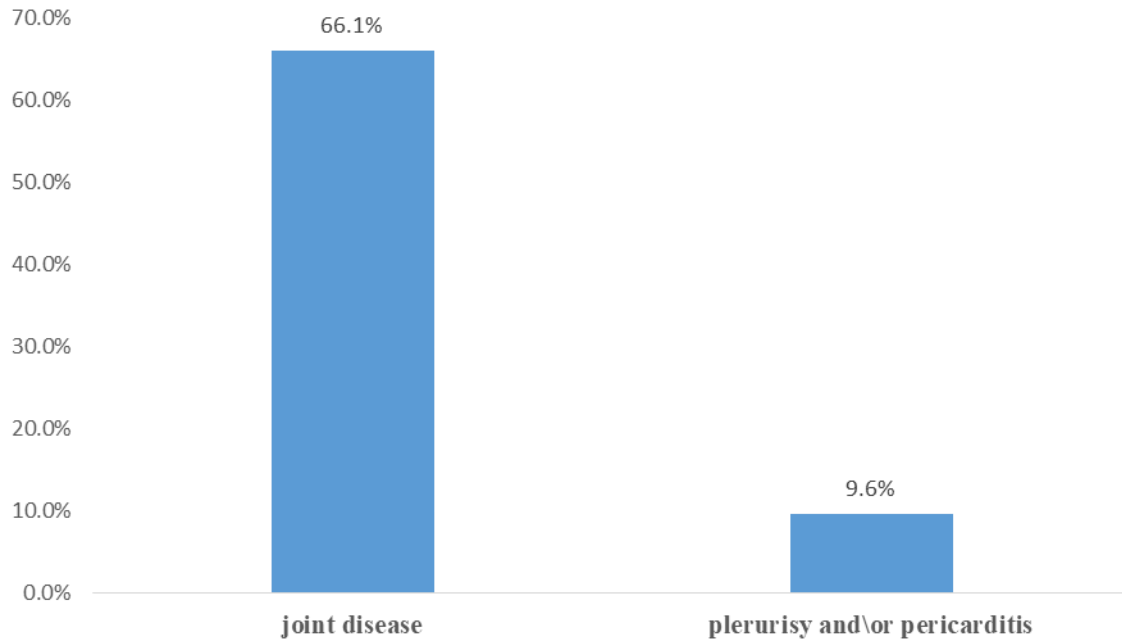


Figure [4]: Complications of SLE among patients with SLE attending ACH, Abha, Saudi Arabia

Table [3]: Laboratory profile for patients with SLE attending ACH, Abha, Saudi Arabia

Laboratory profile	No	%	
Hematologic	Normal	122	53.0%
	Leucopenia	59	25.7%
	Thrombocytopenia	21	9.1%
	Hemolytic anemia	8	3.5%
	Leucopenia & Thrombocytopenia	15	6.5%
	Thrombocytopenia & Hemolytic anemia	5	2.2%
Serological test	Free	27	11.7%
	Low titer positive ANA	171	74.3%
	High titer FANA with homogenous or rim pattern	2	.9%
	Positive anti dsDNA	97	42.2%
	Positive anti SM	17	7.4%
	Low complement	61	26.5%
	Antiphospholipid antibodies	70	30.4%

Table [4]: Distribution of neurological manifestations of patients with SLE attending ACH by their bio-demographic data, Abha, Saudi Arabia

Patient data	Neurological manifestation				P	
	No		Yes			
	No	%	No	%		
Age in years	< 30 years	60	85.7%	10	14.3%	.049*
	30-	68	75.6%	22	24.4%	
	40-	30	71.4%	12	28.6%	
	50+	18	64.3%	10	35.7%	
Gender	Male	15	93.8%	1	6.3%	.092
	Female	161	75.2%	53	24.8%	
Disease duration	< 5 years	62	80.5%	15	19.5%	.035*
	5-9	71	81.6%	16	18.4%	
	10+	43	65.2%	23	34.8%	
Kidney involvement	Free	92	78.0%	26	22.0%	.339
	Biopsy proven nephritis	18	72.0%	7	28.0%	
	Proteinuria	30	68.2%	14	31.8%	
	Both	36	83.7%	7	16.3%	
Hematologic	Normal	90	73.8%	32	26.2%	.320
	Leucopenia	48	81.4%	11	18.6%	
	Thrombocytopenia	17	81.0%	4	19.0%	
	Hemolytic anemia	7	87.5%	1	12.5%	
	12.00	9	60.0%	6	40.0%	
	23.00	5	100.0%	0	0.0%	
Serological test	Free	22	81.5%	5	18.5%	.327
	Low titer positive ANA	128	74.9%	43	25.1%	
	High titer FANA with homogenous or rim pattern	2	100.0%	0	0.0%	
	Positive anti dsDNA	72	74.2%	25	25.8%	
	Positive anti SM	16	94.1%	1	5.9%	
	Low complement	44	72.1%	17	27.9%	
	Antiphospholipid antibodies	50	71.4%	20	28.6%	

* P < 0.05 [significant]