World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

DETERMINATION OF EARLY DIAGNOSTIC AND NEUROLOGICAL SIGNS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS

Rajabov Sardorbek Aminjon ugli
Djurabekova Aziza Takhirovna
Samarkand State Medical University

Article history:

Received: January 11th 2023
Accepted: February 11th 2023
Published: March 22th 2023

Abstract:

In the last years the growth of autoimmune diseases with systemic lupus erythematosus takes a special place; possibilities of modern diagnostics, population awareness, factors of environmental disadvantage (Priaralie), consequences of COVID 19 have become the reflection on the character of the disease and its complications.

Keywords: clinical and neurological examination, systemic lupus erythematosus, S100β protein, MOCA scale, EEG, USDG.

INTRODUCTION. Research of neurological affections of the central and peripheral nervous system against the background of the main disease SLE allowed to reveal which syndromes manifest more often, in which cases the pathological process progresses with the subsequent unfavorable prognosis; neurological syndromes - in the most part tend to changes leading to chronic disturbance of the cerebral circulation, within 3: 1, compared with polyneuropathies; instrumental - EEG, USDG; functional - determination of cognitive level, depression; and laboratory indicators - determination of S100β protein, together can serve as a diagnostic marker in the early stages of changes in the CNS, as a prognostic indicator and assessment of the outcome of the effectiveness of the proposed therapy.

The disease systemic lupus erythematosus was described in 1822 by the French physician Biett, a name acquired because of the distinctive reddish skin lesion. Only 100 years later, neurologists became interested in aspects of central and peripheral nervous system disorders in systemic lupus erythematosus (SLE) disease. Over all these years, the etiology of the disease has not ceased to be studied, and today only the multifactorial concept remains acceptable. According to foreign authors, disorders of the nervous system are in a fairly wide range from 20 to 80% of cases, and the same wide variety of symptoms of neurological disorders (2, 3, 6). In most cases, consider the pathogenesis of lesions of the nervous system, as a consequence of lesions of the cerebral vessels, eventually leading to ischemia or hemorrhage in both acute and chronic condition. As a consequence of vasculopathy, the development of delamination in the hemispheres is not excluded. Convulsive seizures, according to a literature review, mainly develop in patients with SLE at the decompensation stage. For the chronic period, with a long history of the disease, typical neurological disorders of the type of polyneuropathy, myelopathies. The most striking and most studied are considered to be neuropsychiatric changes, in the form of cognitive and depressive shifts. As early as the early 19th century description of SLE, the initial manifestation was unreasonable anxiety, schizophrenic-like syndromes (M.Kaposi, W.Oslez, 1900). Thus, changes in nervous system in SLE are rather variable and diverse in their manifestations, taking into account that SLE itself has increased in recent years, the interest in this problem is relevant and requires study towards finding new methods of diagnosis, optimization of treatment and preventive measures, severe complications.

OBJECTIVE OF THE STUDY. To study clinical and neurological signs of disorders in patients with SLE, to develop ways of early diagnostics of neurological disorders.

MATERIALS AND METHODS: Patients for the period 2020-2022 who received inpatient treatment at the Department of Rheumatology, Samara State Medical University Hospital, a total of 37 people, of whom only 2 were men, were subjected to the study. The diagnosis of SLE was made according to the classification proposed by the American College of Rheumatologists (1999). Age at the time of examination and hospitalization was 35±10 years, duration of disease from 1 to 6 years was 83%. Determination of clinical and neurological disorders (syndromes) was an important component of patient examination. Accordingly, exclusion criteria were patients with SLE who had severe somatic complications in the form of ulcerative lesions, respiratory failure due to pneumosclerosis, pericarditis; age over 45 years, renal failure (patients who received hemodialysis). Of the common diagnostic methods, patients were determined blood biochemistry (expanded), instrumental methods included EEG, USG; neuroimaging, MRI studies, and angiography of cerebral vessels; neurofunctional MOSA

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

scales (investigated cognitive level). Specific studies, determination of S-100β protein, which is a reflection of the degree of brain damage, and in parallel with monitoring, provides an opportunity to determine the prognosis of the course of the disease. Statistical data were processed on an individual computer, using standard Student's test.

RESULTS OF THE STUDY. Neurological manifestations in patients with SLE depend on the duration of the disease, the level of localization of the lesion focus, and the severity of the underlying disease. In the given work there was carried out a selection of patients having these or those signs of neurological syndromes from the total number of patients with SLE; accordingly, 37 patients (2 of them were men) were selected out of more than 100 patients with SLE in Samarkand region. On the basis of the disease classification, the patients' course of disease was determined (examination by rheumatologists). 80% of them had subacute course, 20% - chronic. Preliminary diagnosis confirmed the diagnosis, clinically, laboratory. The task of neurologists was to counsel patients, determine and identify neurological focal symptoms, and refer for additional investigation. A written consent for the study was taken from each patient. Patients almost all complained of headache (71%), different localization and nature of cephalgic pain. Most of the patients reported headache in the morning, sometimes accompanied by dizziness in 33%. Headache was relieved by NSAIDs, in several patients only vomiting brought relief. Thorough objective examination revealed scanty signs of nervous system involvement, slight smoothing of the nasolabial fold in 33.5%, deviation of the tongue in 15%, difference in tendon reflexes of the left and right sides in 20%. No gross coordination disorder was found, only slight instability in Romberg's posture in 26%, miss in palpation test in 7 cases; in terms of sensory changes, decrease in pain and tactile sensitivity, more in the distal parts (asymmetrically) in 13.4%. All signs, have a logical continuation, patients with SLE are prone to cerebral ischemia, under the influence of vascular factor disorders (coagulopathy, vasculopathy). According to literature data, patients with SLE with more than 5 years of disease (up to 10 years) have a risk of cerebral vascular accidents (CVA), respectively, our assumptions are confirmed by earlier studies. In addition, control of blood pressure among patients on average showed relatively high figures from 150/90 to 180/100 in 65% of cases; as for ultrasound scanning studies of cardiac potential, almost 60% registered regurgitation in the mitral valve (1, 2 degrees), the severity of cardiac disorders again depended on the activity of the underlying disease, BP and cardiac parameters are risk factors for chronic (subacute) cerebral circulatory disorders. If headache is considered the most striking manifestation of neurological signs, asthenization in the form of rapid fatigability and weakness (78.2%), anxiety and depressive disorders (54.8%) is in second place; non-systemic dizziness occurs rather more frequently, averaging 60%. Horizontal nystagmus manifested with a frequency of 56.6%; tinnitus (intensifying in horizontal position) in 71.7%; on the part of the autonomic nervous system, acute signs of dermographism in 80.1%. Cognitive disorders occur in this disease, but not in a significant percentage, from the words of patients periodically difficult to orient in space, do not remember current events, on average of the patients examined signs manifested against the background of the activity of the underlying disease in 11.5%(Fig. 1)

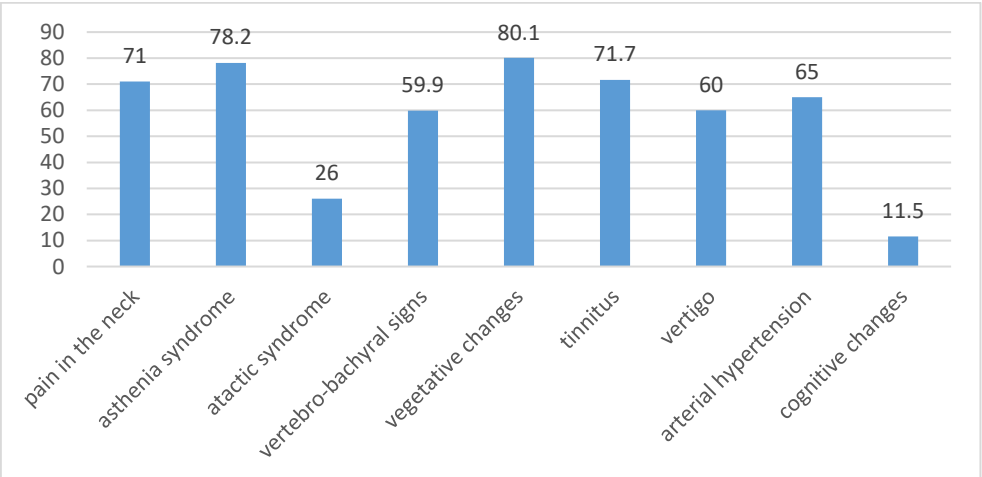

Figure 1. Clinical disorders in the examined patients with SLE (%)

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

Figure 1. Clinical disorders in the examined patients with SLE (%)

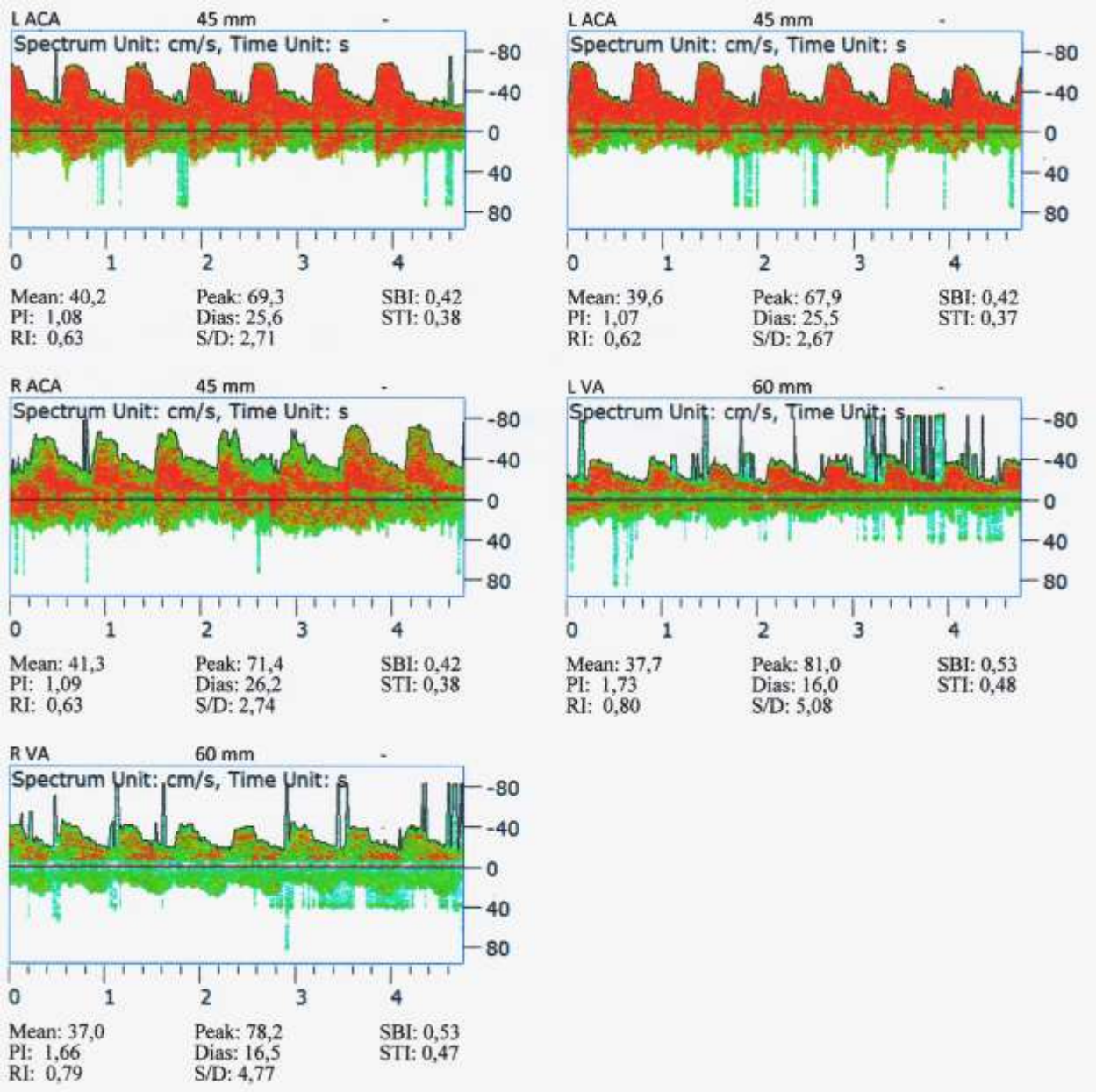

Fig. 2. Patient B., 33 years old with SLE

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

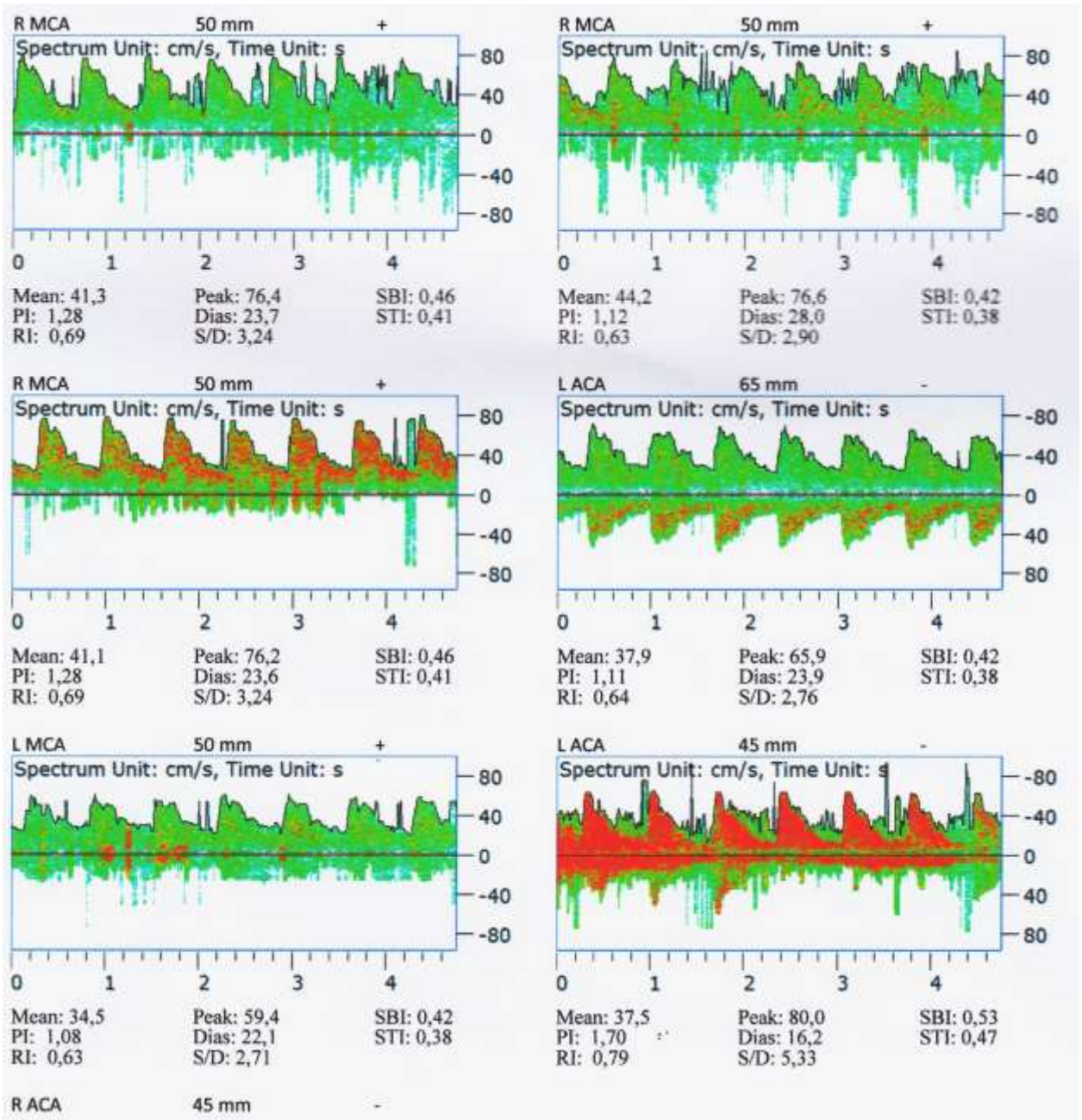

Fig. 3. Patient A., 35 years old with SLE

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

As seen in the figures, blood flow velocity linear in the left common carotid artery was 87,0±17,2 cm/s; in the right one - 79,6±8,0 cm/s; the data confirm the assumption of central hemodynamic disturbances in patients with SLE, indicate signs of chronic ischemia in the brain, by type of reduction of volumetric blood flow. Analysis of the results according to the electroencephalography data revealed general cerebral diffuse changes of the cerebral cortex in 52,2% of cases, slow-wave activity was determined. It was interesting to find paroxysmal activity (no history of seizures in the patients taken for the study) in 19.9% on the average (Fig. 4).

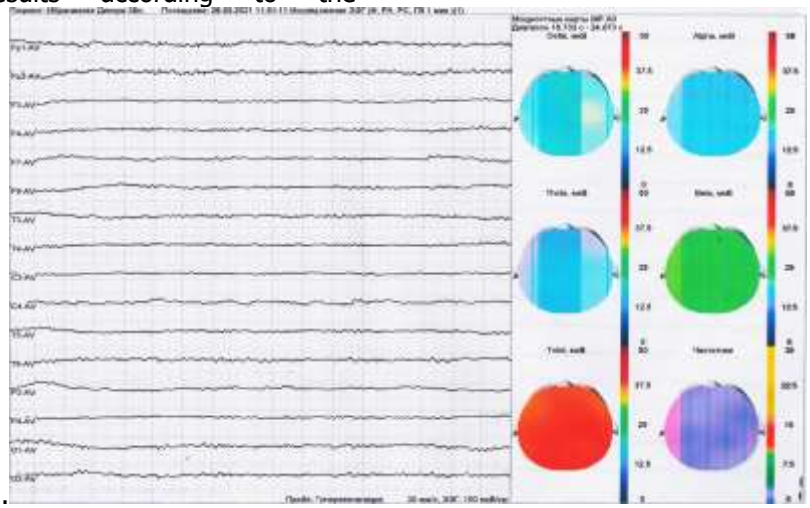

Fig. 4. Patient A., 35 years old with SLE

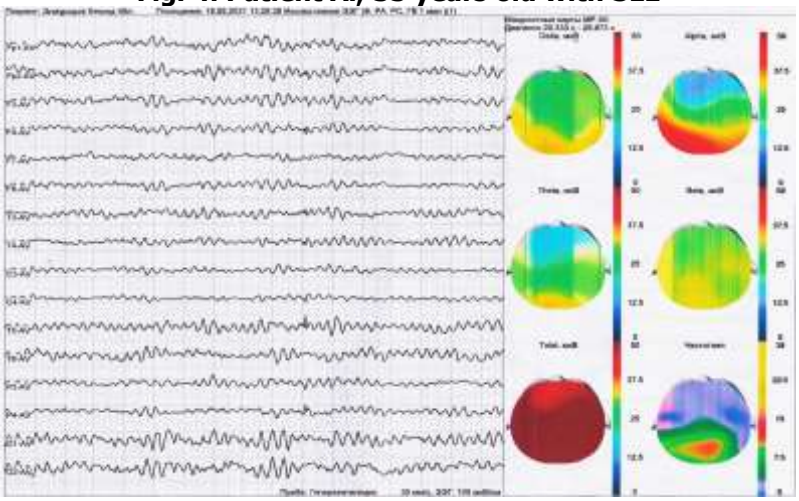

Fig. 4. Patient B., 19 years old with SLE

Neuroimaging parameters, almost all patients had intracranial hypertension (dilation of the stomach space), 69.9% had signs of cerebral atrophy, 56.3% had leukorrhosis.

Thus, the given data of examination of patients, clinical, instrumental, neuroimaging indicate predominant changes in the central nervous system. The greater significance of cerebrovascular pathology was typical for patients in the chronic stage of the disease.

Against the background of increasing disease (disease duration), intensification of vascular conflicts, progression of chronic cerebrovascular disorders, with all the characteristic signs: decreased cognitive function, asthenic syndrome, atactic, cephalgic, vertebrobasilar insufficiency, etc. Modern researchers use, in addition to available, gold-standard methods of instrumental diagnosis, biochemical markers that help to recognize and predict diseases at early stages. One of such, often used, to determine the damage of the nervous system (tissue) is the protein S-100β. The literature provides evidence-based factors for the involvement of S-100β protein in the disease process, where an increase in protein levels, unequivocally

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

shows impairment in the presence of brain structure damage, as the concentration of S-100β, initially higher in both the central and peripheral nervous system compared to the concentration in other tissues (in the brain S-100β protein is 10/4 times higher than in other organs, Sosnovsky E.A., 2014). All patients with SLE, S-100β protein level was determined in blood serum. Thus, the protein concentration in the blood of patients in the subacute period was at the upper limits of the normal level (that is, there was an increase, but not significant), which corresponded to relatively mild disturbances, according to neuroimaging data, in the brain. In 31.5% of patients, S-100β was 0.125 μg/L, and on MRI in these patients, one of the foci of the lesion was Ventricular Dilation. A larger percentage came from chronic SLE (disease duration ≥10 years), here S-100β protein levels were high, exceeding the normal range of 0.153 μg/L to 1.7 μg/L, with an average of 1.5 μg/L, where neuroimaging changes were in the form of multiple lesions (cerebral atrophy, leukoreosis, subarachnoid dilation, etc.).

Thus, the study of S-100β protein concentration in patients with SLE, can serve as a biochemical marker of early detection of nervous system disorders, and with a more thorough set of optimal treatment, an evaluation factor of the effectiveness of the selected treatment and a prognostic matrix of the risk of exacerbation of the condition from the nervous system (for example, acute cerebral circulatory disorders). The final step in the study was cognitive impairment screening. The result was assessed on the basis of the MOSA test (which had a range from 0 to 30 points). In the cases tested, the majority of impairments were noted in the 5-word (noun) memory test, the short-term memory test, and in the phonetic fluency task, when performing sequential subtraction, patients affected more time than they should, thereby reducing the total test score. In 35% of the cases, patients scored 26±1 points, which corresponded to the lower limits of normal, and in the remaining cases the MOSA test was rated as 22±1 points, which corresponded to moderate cognitive impairment. These indices, are confirmation of the presumed chronic cerebral circulation disorder in patients with SLE, in the aggregate of previously performed clinical, laboratory, and instrumental examinations.

CONCLUSION

1. Patients with SLE have nervous system disorders, both central and peripheral, but the percentage of chronic cerebral ischemization prevails, approximately 3:1, the stage is facilitated by vascular insufficiency and as a consequence cerebrovascular pathology, which is evident from the indices of heart failure, blood structure and circulating blood volume
2. the evaluation analysis of clinical syndromes, electroencephalographic, neuroimaging, laboratory data (protein S-100β) and testing of cognitive changes confirmed the assumption of chronic impairment of cerebral circulation in patients with SLE and necessity of correction or optimization of treatment, for prevention of acute cerebral accidents
3. of the total number of patients examined, women were found (which corresponds to the literature data). Therefore, there is a need to study neurological disorders in a gender ratio, taking into account hormonal features and neuropsychological aspects of the female body, in subsequent studies.

LITERATURE:

1. Akramova D., Rakhimbaeva G., Bobomuratov T. Early correction of circadian rhythm disorders in Parkinson's disease and vascular parkinsonism //Journal of the Neurological Sciences. – 2021. – T. 429. – C. 119530.
2. Akramova D., Rakhimbaeva G., Vakhabova N. &Akramova., N.(2017). Stroke incidence and association with risk factorsin women in Uzbekistan //CEREBROVASCULAR DISEASES. – T. 43.
3. Quon J.L., Kim L.H., Lober R. M., Maleki M., Steinberg G.K., Yeom K.W. Arterial spin-labeling cerebral perfusion changes after revascularization surgery in pediatric moyamoya disease and syndrome // J Neurosurg Pediatr. - 2019. - Feb 8. - T. 23, No 4. - C. 486-492.
4. Mary Beth F Son, MD COVID-19:мультисистемный воспалительный синдром // cial reprint from UpToDate® www.uptodate.com, 2020 UpToDate, 22 c.
5. Faizulina D.L., Sprach V.V. Lesion of the nervous system in systemic lupus erythematosus // Siberian Medical Journal, 2009, No. 7. C. 5-10
6. Kuchinskaya Ye.M., Yakovleva Yu.A., Rakova M.A., Lyubimova N.A., Suspitsyn Ye.N., Kostik M.M. Systemic lupus erythematosus with neuropsychological manifestations in a child: description of a clinical case and review of international recommendations for diagnosis and treatment // Russian Bulletin of Perinatology and Pediatrics, 2021; 66:(1). C. 98-105
7. Zhuravleva L.V., Aleksandrova N.K., Letik I.V. Features of differential diagnosis of systemic lupus erythematosus // Kharkov National Medical University. Manual. 40 c.
8. Golovach I.Y., Egudina E.D., Ter-Vartanyan S.H. New in the diagnosis, pathogenesis and treatment of neuropsychiatric systemic lupus erythematosus:

World Bulletin of Public Health (WBPH)
Available Online at: https://www.scholarexpress.net
Volume-20, March 2023
ISSN: 2749-3644

a review of literature 2017-2019 // Ukrainian Rheumatology Journal, № 3 (81), 2020. C. 33-41
9. Garabova N.I., Burzhunova M.G., Strutsenko A.A., Nizhelskaya A.A., Ivanova S.M. A case of systemic lupus erythematosus with neurological complications // Difficult Patient #5. T. 16. 2018. C. 35-37
10. Razhabov SA Jurabekova AT, Zhabbarova R.Sh. Feature of neurological disorders in patients with systemic lupus erythematosus during covid pandemic // J. Neurology and neurosurgical research, 2022, ¹ 1, p. 60-63
11. Nikandrov V.N., Chaplinskaya E.V. Protein S-100: structural and functional properties and its role in nervous tissue // J. Biopolimery i klitina. 2005. T. 21. № 1, c. 13-27markers of nervous system disorders // BioChemMac Group, p. 72-84
12. ANALYSIS FOR AUTOIMMUNE DISORDERS // Skugar Y. M. Clinical analysis and pathogenetic aspects of neurological disorders in rheumatoid arthritis // Disc. ....c.m.s., 2006, Saratov, 109 p.