BRITISH MEDICAL JOURNAL

British Medical Journal
Volume 1, No 2., 2021
Internet address: http://ejournals.id/index.php/bmj
E-mail: info@ejournals.id
Published by British Medical Journal
Issued Bimonthly
3 knoll drive. London. N14 5LU United Kingdom
+44 7542 987055
Chief Editor
Dr. Fiona Egea

Requirements for the authors.
The manuscript authors must provide reliable results of the work done, as well as an objective judgment on the significance of the study. The data underlying the work should be presented accurately, without errors. The work should contain enough details and bibliographic references for possible reproduction. False or knowingly erroneous statements are perceived as unethical behavior and unacceptable.
Authors should make sure that the original work is submitted and, if other authors' works or claims are used, provide appropriate bibliographic references or citations. Plagiarism can exist in many forms - from representing someone else's work as copyright to copying or paraphrasing significant parts of another's work without attribution, as well as claiming one's rights to the results of another's research. Plagiarism in all forms constitutes unethical
acts and is unacceptable. Responsibility for plagiarism is entirely on the shoulders of the authors.
Significant errors in published works. If the author detects significant errors or inaccuracies in the publication, the author must inform the editor of the journal or the publisher about this and interact with them in order to remove the publication as soon as possible or correct errors. If the editor or publisher has received information from a third party that the publication contains significant errors, the author must withdraw the work or correct the errors as soon as possible.

British Medical Journal Volume-1, No 2
10.5281/zenodo.5843284

VIRUS ASSOCIATED ENCEPHALITIS. CLINICAL CURRENT AND OUTCOME.

Khojimatova Malika Shukhratovna
Andijan Medical Institute Department of Neurology

Abstract: Acute viral encephalitis (OVE) is characterized by the severity of the course, a high mortality rate and a high incidence of neurological complications of a disabling nature. We examined 58 patients aged 18-70 with manifestations of viral encephalitis. The etiology, severity and outcome of the disease were studied. The presence of persistent complications. The level of cytokines, C-reactive protein was also determined and correlations between them were revealed. A neuroimaging examination was studied in the dynamics of the disease in order to determine the localization of structural changes in the brain and the possibility of preventing the development of severe complications of cerebral coma and mortality.

Keywords: encephalitis, virus, cytokines, interleukins, neuroimaging.

The term encephalitis means an inflammatory lesion of the brain substance. It is characterized by a change in mental status in combination with acute fever, seizures, neurological deficits, pleocytosis in the cerebrospinal fluid (CSF), neurovisual and electroencephalographic abnormalities (M.S. Marchuk 2019). The most common form of severe encephalitis in the world (2-4 cases per million population per year) • is recorded in all age groups, regardless of gender. However, it most often develops in people aged 6 months to 20 years and in people over 50 years old (~ ½ of all cases) • mortality before the introduction of acyclovir - 70%, today - 14-28% • in 9-13% of cases after diseases - persistent neurological deficits (James S et al / 2009).

Modern immunological methods for the study of cytokines, determination of the DNA of the virus in the blood and cerebrospinal fluid made it possible to diagnose in a timely manner and prescribe adequate treatment.

Materials and methods: We studied 58 patients with a diagnosis of acute viral encephalitis for the period from 2015-2020.

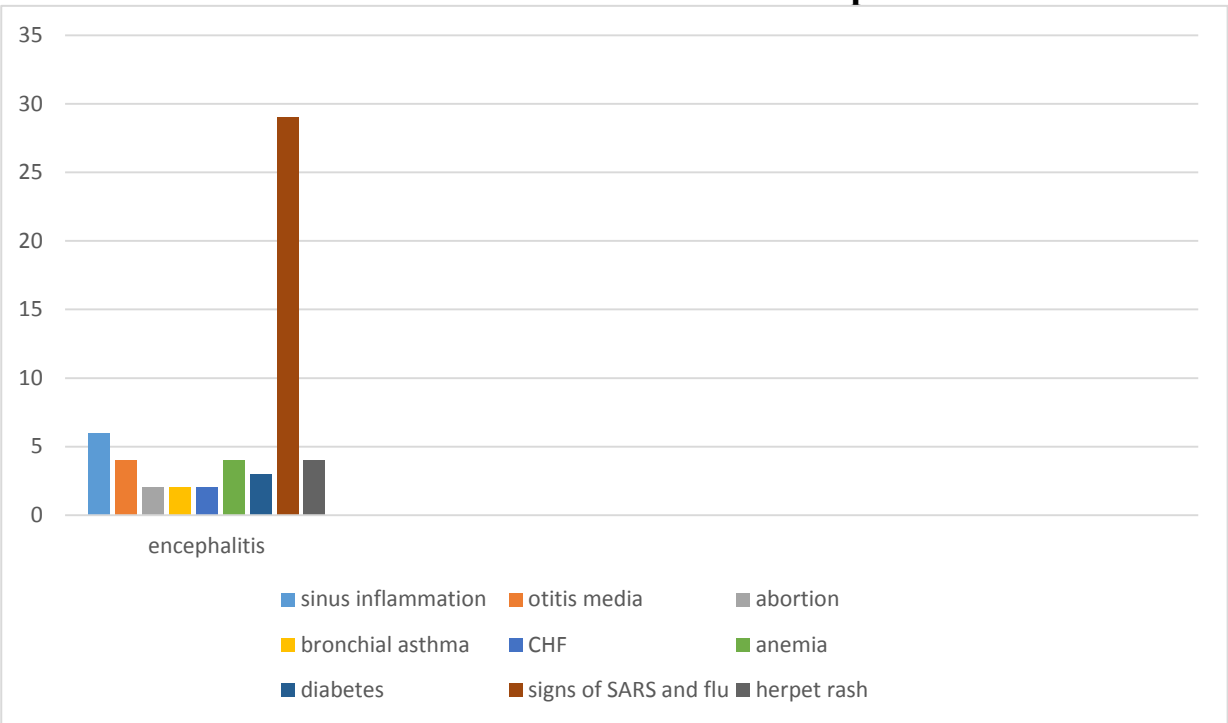
The patients were examined in the acute period and were followed up in the follow-up. All patients underwent a standard clinical and neurological examination. According to the indications, an instrumental examination was carried out, including a neuroimaging study - computed tomography (CT) and magnetic resonance imaging (MRI) of the nervous system.

A survey of patients and their relatives to clarify anamnestic data in order to identify diseases that preceded the inflammatory process showed that in most patients with encephalitis, before the development of clinical manifestations, signs of acute respiratory viral infections and influenza appeared (23.3%). This once again indicates the viral etiology of the diseases that developed in the examined patients. In addition, a number of patients often had herpetic eruptions, moderate and severe anemia and

inflammatory diseases of the ENT organs, in the form of otitis media, sinusitis (diagram 1).

Diagram 1

Anamnestic data of the examined patients



One of the important diagnostic methods is to determine the causative agent of the inflammatory process. For this, today there are various immunological diagnostic methods. The serological method allows to determine the etiology of encephalitis only retrospectively. The polymerase chain reaction (PCR) method is more informative: the sensitivity of the method is 96%, the specificity is 99%, however, it is worth considering the possibility of obtaining a false negative result within 3 days from the moment of infection and after 10-14 days of illness. For this purpose, in our work, the use of immunological methods made it possible to establish the etiology of acute inflammatory processes: in 10 (17.2%) patients, herpetic inflammatory process was diagnosed, in 37 (63.8%) - acute respiratory infections, in 3 (5.2 %) cytomegalovirus infection and in 8 (13.8%) patients, the etiology of the inflammatory process remained unspecified (Table 1).

Table 1

Etiological factor identified during immunological research

Nosology	**CMV**	**ARVI**	**Herpes virus**	**Unspecified causative agent**
Encephalitis	3 (5,2%)	37 (63,8%)	10 (17,2%)	8 (13,8%)

In patients with encephalitis, in 76% of those examined, the onset of encephalitic symptoms occurred in the first 10 days from the onset of the disease; in 22 (88%) patients, coma developed during the first week. 56% of patients were admitted to clinics on days 3-7 (mainly on days 5-6), the rest of patients were admitted on days 8-14 from the onset of the disease: 41 patients (33.1%) were admitted immediately to the intensive care unit in an extremely serious condition , in the neurological status, 48 patients (38.4%) had coma 1-3 degrees according to the Glasgow scale. On the 2-3rd day of hospital stay, another 8% of patients developed a convulsive status preceding a coma.

For a more objective determination of the level of coma in all three groups, consciousness was assessed on the Glasgow coma scale. According to the tests carried out in the group with encephalitis, 44.8% of the examined were unconscious and corresponded to 15 points. The soporous state and moderate coma on the Glasgow scale is 8-10 points and 6-7 points, respectively. These changes in the level of consciousness were identified in 20.7% and 17.2% of the surveyed, respectively. Terminal coma was detected in 8 patients, which amounted to 13.8%.

Clinical and neurological research showed that the study group had signs of organic brain damage with a number of neurological symptoms in the form of bulbar disorders (58.6%), pyramidal disorders (74.1%) (Table 2).

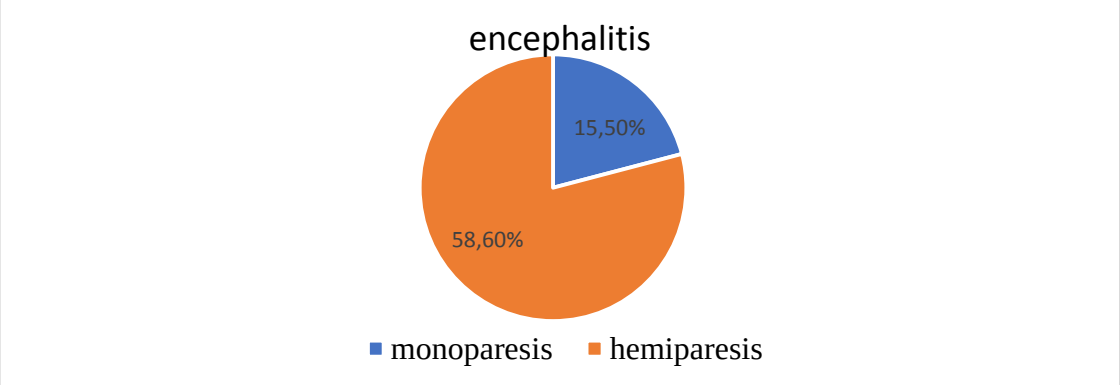
table 2

Comparative characteristics of the main neurological symptoms

№	**Неврологические симптомы**	**Encephalitis**
1	Bulbar disorders	34 (58,6%)
2	Convulsive syndrome	23 (39,7%)
3	Cranial nerve damage	17 (39,3%)
4	Pyramidal violations	43 (74,1%)
5	Sensory impairment	38 (65,5%)
6	Violations of VNI	2 (3,4%)

Movement disorders were more often observed in the form of hemiparesis (58.6%), as well as monoparesis (15.5%) (diagram 2).

Diagram 2



10.5281/zenodo.5843284
Coordination disorders were associated in 3.4% of cases with damage to the frontal lobes and manifested by frontal ataxia, and in 5.2% of cases with damage to the cerebellum and manifested by cerebellar ataxia.

Research of cytokines: IL -1 b is a multifunctional cytokine with a broad spectrum of action, which plays a key role in the development and regulation of nonspecific defense and specific immunity. He is one of the first to be included in the body's defense response under the action of pathogenic factors. It is synthesized and secreted mainly by macrophages and monocytes. Lymphocytes and fibroblasts can take part in its production. Reference values 0-11 pc / ml.

Interleukin-6 (IL-6) is a pro-inflammatory cytokine that affects many organs and systems of the body: blood, liver, immune and endocrine systems, metabolism. It is synthesized by activated monocytes / macrophages, fibroblasts, endothelial cells during inflammation, trauma, hypoxia, bacterial infections. The biological role of IL-6, first of all, is the induction of repair mechanisms and activation of immune defense (activation and differentiation of T cells, maturation of B cells, synthesis of C-reactive protein in the liver, increased hematopoiesis). It is a marker of acute systemic inflammation. Excessive production of interleukin-6 causes tissue damage due to an autoimmune reaction.

Temporary production of interleukin-6 helps to protect the body from environmental stressors such as infection and tissue injury. When the source of stress is no longer active, the production of interleukin-6 is stopped by specialized regulatory systems, which leads to the normalization of serum levels of acute phase proteins. Violation of regulatory systems, which is accompanied by persistent production of interleukin-6, can lead to the development of various diseases. Reference values 0-7 pk / ml.

Tumor necrosis factor (TNF) belongs to a class of cytokines - proteins that are produced by various cells of the immune system to regulate a complex of intercellular interactions in the immune response. The main cells producing tumor necrosis factor are activated monocytes and macrophages. TNF can also be secreted by peripheral blood granulocytes, natural killer cells and T-lymphocytes. The main stimulators of the secretion of tumor necrosis factor are viruses, microorganisms and their metabolic products (for example, lipopolysaccharides of gram-negative bacteria). Reference values:

<8.1 pg / ml (table No. 3).

Table 3

Indicators of immunological research in the study groups

№	Nosology	The number of patients examined		IL -1β	IL -6	TNF-alpha	SEC large	SEC small
		Abs number	%					
1	Encephalitis	20	34,5	19,2± 1,2	16,2±0,9	17,4±0,5	142±3,1	175,9± 2,9
2	control	20	66,7	9,94 ± 1,78	3,42 ± 0,28	4,58 ± 0,81	8,58±1,34	14,22± 1,51

As can be seen from this table, in the encephalitis group, the level of all cytokines was significantly higher than the level of the control group, and also exceeded the reference values.

C-reactive protein (CRP, English C-reactive protein, CRP) is a blood plasma protein belonging to the group of acute phase proteins, the concentration of which increases during inflammation, plays a protective role. C-reactive protein is used in clinical diagnostics along with ESR as an indicator of inflammation. The average CRP in our study was 43.2 ± 0.7 mg / L

The examination of cerebrospinal fluid (CSF) is of great diagnostic value, therefore, all patients with suspected encephalitis should undergo puncture of the subarachnoid spaces of the spinal cord. A contraindication to this study is the displacement of the midline structures of the brain according to CT / MRI data. In our study, in patients with encephalitis, the Pandey reaction in 43.1% of cases was 2 crosses, 31% 3 crosses and 4 crosses in 10.3% cases. The level of protein (average value was 2.6 ± 0.4) and cells (cytosis - 45.7 ± 3.5) were also increased. And 86.2% revealed lymphocytic pleocytosis, which speaks in favor of viral etiology.

The method of neuroimaging MRI research was carried out in 45 patients, the presented figures show that in all of the above diseases, lesions of various localization and sizes are detected in the brain. All these lesions of the brain matter are manifested by various neurological disorders and correspond to the location of the foci. The lesion of the brain substance in one hemisphere was 44.4%, several foci in one hemisphere 33.3% and the lesion of both hemispheres was 22.2% of cases.

The study of the outcome of the disease showed that patients recovered in 79.3% of cases, but with complications, and the lethal outcome was 17.2%.

As can be seen from the data of our research, it can be concluded that viral encephalitis is the most formidable disease that threatens the life of patients and leads to a persistent neurological defect.

Early detection of the etiology, CRP, interleukin levels will make it possible to diagnose in a timely manner and begin targeted treatment, which will improve the course and prognosis of the disease.

References

1. Venkatesan A., Tunnel A.R., Blokh K.S. et al. Case definitions, diagnostic algorithms and priorities for encephalitis: a consensus statement by the international consortium on encephalitis. Clin Infect Dis 2013; 57: 1114-1128.
2. Venkatesan A. Epidemiology and outcomes of acute encephalitis. Curr Opin Neurol 2015; 28: 277-282.
3. Marchuk M.S. Viral encephalitis: modern patient management tactics. Dec 2019
4. Malmgaard L. Induction and regulation of IFN in viral infections. J. Interferon Cytokine Res 2004; 24: 439-454. Misra UK, Kalita J, Phadke RV et al. Usefulness of various MRI sequences in the diagnosis of viral encephalitis. Acta Trop 2010; 116: 206-211.
5. Granerod J, Ambrose HE, Davies NW, et al. Causes of encephalitis and differences in their clinical manifestations in England: a multicenter, population-based prospective study. Lancet Infect Dis 2010; 10: 835-844.
6. Pääkkönen M., Kallio M. J., Kallio P. E., Peltola H. C-reactive protein versus erythrocyte sedimentation rate, white blood cell count and alkaline phosphatase in diagnosing bacteraemia in bone and joint infections. (English) // Journal of pediatrics and child health. - 2013. - Vol. 49, no. 3. - P. 189-192.
7. Steiner I., Schmutzhard E., Sellner J. et al. EFNS-ENS guidelines for the use of PCR technology for the diagnosis of infections of the nervous system. Eur. J. Neurol. 2012; 19 (10): 1278-1291.
8. Tunkel AR, Glaser CA, Bloch KC, et al. Management of Encephalitis: A Clinical Practice Guide by the American Society for Infectious Diseases. Clin Infect Dis 2008; 47: 303-327.