BG Pulse Journal USA
ISSN:1947-2536 http://www.bgpulseusa.com/index.php/bg

INDICATIONS AND CONTRONDICATIONS FOR THE USE OF THE INTRATHECAL MEDICINAL METHOD IN MENINGITIS, AS WELL AS MODERN METHODS OF MENINGITIS TREATMENT

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Abstract.
This article analyzes the clinical and pathophysiological foundations of the intrathecal drug administration method in the treatment of meningitis. The aim of the work is to scientifically substantiate indications and contraindications for the use of intrathecal therapy in cases of severe progression and inadequate response to traditional antibacterial therapy, as well as to evaluate the effectiveness of modern comprehensive treatment approaches. The study analyzed literature, clinical protocols, and scientific sources from recent years regarding central nervous system infections. According to the results, intrathecal administration allows for the elimination of pharmacokinetic restrictions associated with the hematoencephalic barrier and ensures the therapeutic concentration of antibiotics in the cerebrospinal fluid. However, it was substantiated that this method is invasive and cannot be used in the presence of conditions such as intracranial hypertension and hemostasis disorders. The article highlights the advantages of a comprehensive approach combining etiological, pathogenetic, and symptomatic therapy in the treatment of meningitis based on scientific evidence.

Keywords: meningitis, intrathecal therapy, cerebrospinal fluid, hematoencephalic barrier, antibacterial therapy, central nervous system infections.

SIGN IN

Meningitis is one of the most severe infectious diseases of the central nervous system, accompanied by inflammation of the meninges and spinal cord and characterized by high mortality, rapid progression, and severe neurological complications. Bacterial factors play a leading role in the etiological structure of the disease, and it is in these forms that delayed treatment leads to life-threatening consequences. In modern medicine, antibacterial therapy initiated at an early stage and administered in adequate doses forms the basis for treating meningitis. However, due to the pharmacological properties of the hematoencephalic barrier, the penetration of certain drugs into the cerebrospinal fluid is limited, which reduces the effectiveness of treatment for severe and resistant infections. In this regard, in recent years, there has been a growing interest in the intrathecal therapy method based on the direct administration of drugs into the cerebrospinal fluid. This approach allows antibiotics to reach the affected site in high concentrations, bypassing pharmacokinetic barriers. However, intrathecal administration is an invasive procedure that must be performed by highly qualified specialists based on strict indications and clear contraindications.

GOAL

The purpose of this article is to analyze the clinical foundations of the intrathecal drug administration method in the treatment of meningitis, scientifically substantiate indications and

contraindications for its use, and determine the role and significance of this method within modern comprehensive treatment approaches.

MATERIALS AND METHODS

The study was based on a literature analysis that examined modern textbooks, monographs, national and international clinical protocols on infectious diseases, neurology, and clinical pharmacology, as well as scientific articles from recent years. A comparative analysis of the data presented in the sources was conducted, and the pharmacodynamic and pharmacokinetic characteristics, clinical efficacy, and safety factors of intrathecal therapy were evaluated.

INDICATIONS FOR THE USE OF INTRATECAL THERAPY

The intrathecal drug administration method is considered appropriate in the following clinical cases:

1. Severe bacterial meningitis, especially in forms accompanied by sepsis and multiple neurological lesions.
2. Inadequate response to standard intravenous or intramuscular antibacterial therapy.
3. Identification of microorganisms highly resistant to antibiotics.
4. In cases complicated by ventriclitis and meningoencephalitis.
5. For infectious complications following neurosurgical interventions.

In these situations, drugs administered via the intrathecal route bypass the blood-brain barrier, forming a high therapeutic concentration directly in the cerebrospinal fluid and exerting a rapid effect on the pathogenic microflora.

CONTRIBUTIONS TO THE USE OF INTRATECAL THERAPY

Intrathecal treatment is not recommended in the following cases:

1. A sharp increase in intracranial pressure and a risk of developing a brain hernia.
2. Disorders of the coagulation system and hemorrhagic syndrome.
3. Purulent inflammatory processes in the area of the spinal cord puncture.
4. Severe cardiovascular failure and hemodynamic instability.
5. Individual hypersensitivity to medications.

In the presence of these contraindications, intrathecal therapy can cause severe neurological complications and life-threatening conditions.

MODERN TREATMENT APPROACHES

Treating meningitis requires a comprehensive and step-by-step approach in modern medicine. The basis of etiological therapy is the early use of antibacterial drugs with a wide range of action. When selecting antibiotics, the type of pathogen, its sensitivity to medications, the patient's age, and comorbidities are taken into account. In severe cases, initial empirical therapy is conducted, followed by the determination of drugs based on bacteriological examination results. Pathogenetic therapy is aimed at reducing intracranial hypertension, preventing brain edema, and ensuring hemodynamic stability. For this purpose, dehydrating agents, corticosteroids, osmotic diuretics, and infusion therapy are used. As part of symptomatic treatment, measures are taken to reduce body temperature, eliminate seizures, reduce pain syndrome, and support respiratory function. Intrathecal therapy is considered an additional but important link in this complex treatment system. This pathway is pharmacologically justified, especially for antibiotics that pass poorly through the blood-brain barrier or exhibit toxic effects when systematically administered in high doses.

RESULTS AND DISCUSSION

An analysis of the literature shows that antibacterial drugs administered intrathecally produce high and stable therapeutic concentrations in the cerebrospinal fluid. This leads to faster eradication of pathogenic microorganisms, a decrease in the inflammatory process, and early regression of

clinical symptoms. At the same time, since intrathecal therapy is an invasive procedure, its complications can develop: post-puncture headache, liquefactive leakage, aseptic inflammation, and in rare cases, neurological damage. Clinical practice confirms that the intrathecal drug administration method, when used according to strict indications, with correctly selected drugs and doses, significantly increases the effectiveness of treatment for severe forms of meningitis and meningoencephalitis. At the same time, when using this method, the patient's general condition, intracranial pressure level, and hemostasis indicators must be under constant supervision.

CONCLUSION

According to the results of the analysis, the intrathecal drug administration method is a treatment approach with high clinical efficacy in severe, resistant, and complicated forms of meningitis. This method eliminates pharmacokinetic limitations associated with the hematoencephalic barrier, ensuring that antibiotics act at a therapeutic level directly in the cerebrospinal fluid environment. At the same time, intrathecal therapy is an invasive procedure requiring high qualifications and experience, and its use is advisable only when there are strict indications and all contraindications have been excluded. A comprehensive approach to the treatment of meningitis, combining etiological, pathogenetic, and symptomatic therapy in combination with an intrathecal drug administration method, plays an important role in saving patients' lives and reducing long-term neurological complications. To widely implement this approach in practice, increasing the qualifications of medical workers, improving modern clinical protocols, and ensuring the safety of invasive procedures remain urgent tasks.

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