



Alternatives to Analgin in Pediatrics

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ABSTRACT

The article discusses aspects of rational and safe relief of fever in children, especially when providing emergency care

Keywords:

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Introduction

Fever (increased body temperature) is one of the most common symptoms and complaints in children with both infectious and non-infectious diseases. Fever remains the leading reason for visits to the pediatrician. At the same time, fever is an adaptation reaction that occurs in response to exposure to pathogenic stimuli and is characterized by a restructuring of thermoregulation processes, an increase in body temperature and body reactivity functions. Since fever is a nonspecific protective-adaptive reaction, the reasons that cause it are very diverse. Fever most often occurs in infectious diseases in response to the effects of viruses, bacteria and their decay products. An increase in body temperature of a non-infectious nature can be of different origins: central (hemorrhage, tumor, trauma, cerebral edema), psychogenic (neurosis, mental disorders, emotional stress), reflex (pain syndrome), endocrine (hyperthyroidism, pheochromocytoma), resorptive (bruise, tissue necrosis, aseptic inflammation, hemolysis), as well as the administration of certain medications (ephedrine, xanthine derivatives, antibiotics, etc.).

Materials And Methods

It should be noted that with the same level of hyperthermia, fever in children can occur differently. If heat transfer corresponds to heat production, and this indicates an adequate course of fever, then clinically it is manifested by the child's relatively normal state of health, pink or moderately hyperemic skin color, moist and warm to the touch. This type of fever - "pink fever" - usually does not require the use of antipyretics and is more often observed in children with infectious and inflammatory diseases of the respiratory system with an uncomplicated premorbid background. Their temperature reaction, as a rule, is favorable - it does not exceed 38.5 ° C and does not require the use of medications. In these cases, drinking plenty of fluids is indicated, and physical cooling methods can be used.

Results And Discussion

In the case when, with increased heat production, heat transfer is inadequate due to impaired peripheral circulation, the course of the fever is prognostically unfavorable. Clinically, severe chills, pale skin, acrocyanosis, cold feet and palms are noted. This type of

fever is called "pallid fever". Children in whom it occurs, as a rule, require antipyretic drugs in combination with vasodilators and antihistamines (or antipsychotics). One of the clinical variants of the unfavorable course of fever in young children is a hyperthermic state, in most cases caused by infectious inflammation accompanied by toxicosis. In this case, there is a persistent (6 hours or more) and significant (above 40.0 °C) increase in body temperature, accompanied by impaired microcirculation, metabolic disorders and progressively increasing dysfunction of vital organs and systems [1].

Antipyretic drugs (analgesics-antipyretics) have been used in medicine for a long time. In 1763, the first scientific report was made on the antipyretic effect of a drug obtained from willow bark (R. Stone). It was later found that the active principle of this drug is salicin. Gradually, synthetic analogs of salicin (sodium salicylate and acetylsalicylic acid) completely replaced natural compounds in therapeutic practice. Subsequently, the study of the role of biologically active endogenous compounds in the development of inflammation, which began in the 1930s, led to the creation of several pharmacological groups of non-opioid analgesics, which are divided into non-steroidal anti-inflammatory drugs and "simple analgesics" (paracetamol) [3].

The use of antipyretics in the arsenal of treatment of children with various, especially infectious, diseases occupies one of the first places. However, the practice of their use by both doctors and the population is far from perfect. Firstly, antipyretics are quite often prescribed to children with a slight rise in temperature - with low-grade fever, and even as planned. In accordance with the recommendations of the World Health Organization (WHO) [5] and domestic treatment protocols, antipyretic drugs should be prescribed when the child's body temperature is above 39.0 °C. The exceptions are children at risk of developing febrile seizures, with severe diseases of the circulatory and respiratory organs, and patients in the first two months of life - in these cases, antipyretics

are prescribed at body temperatures above 38.0–38.5 °C.

A serious complication of analgine therapy is the development of severe hemolytic crises followed by renal failure. The occurrence of hemolysis of erythrocytes in this case is associated with the formation, during the use of analgin, of immune complexes that are adsorbed on the membrane of erythrocytes and cause their destruction (Ribera, 1981). In addition, drugs of the pyrazolone group have a mineralocorticoid effect, increase the secretion of vasopressin, and promote the retention of water, sodium salts, and bacterial toxins. In children in a state of toxicosis, this can lead to aggravation of the phenomena of infectious-toxic shock and the development of cerebral edema (A.P. Viktorov, 1986). The use of analgin in newborns and young children is especially dangerous. It should be noted that analgin, even in normal doses, often reduces the temperature to 34–35 °C with the possible development of a long-term collaptoid state. There are descriptions of cases of the development of anaphylactic shock against the background of analgin.

At the same time, as a study of the actual use of antipyretic drugs in children conducted by the GfK MR Russia agency showed, 55% of parents used cefekon suppositories as antipyretic drugs in children, 20% used analgin, 20% used acetylsalicylic acid. In addition, in the practice of providing emergency medical care at home to children with fever, in 80% of cases, an analgin solution is administered parenterally in combination with one of the histamine blockers (mainly diphenhydramine) [2]. That is, in our country, analgin is de facto the main antipyretic drug for providing emergency care to children with fever. Such an approach contradicts modern requirements for providing care to children with fever, where the need for the safety of medicines and the techniques used is of paramount importance [5].

Safety in children is ensured by both the choice of drug, the possibility of precise dosing, and ease of use. In this regard, the World Health Organization officially recognizes only paracetamol and ibuprofen as antipyretics,

which fully meet the criteria of safety and effectiveness in pediatric practice, and recommends their use in children [3].

Side effects were most often caused by incorrect dosing of the drug or overdose (sometimes intentional) and were associated with liver damage. The conclusion of the study: the risk of serious complications can increase significantly only with a 10-fold overdose of paracetamol.

The effectiveness and high level of safety of paracetamol have made it one of the most widely used drugs for the relief of fever in children. Moreover, today a form of the drug has been created for intravenous use (Infulgan, Yuria-Pharm), which has become a safe alternative to analgin solution used in emergency care for both children and adults. "Infulgan" is available in bottles of 20, 50 and 100 ml, containing 10 mg of paracetamol per 1 ml of solution.

For children weighing from 10 to 50 kg, Infulgan is administered intravenously at a dose of 15 mg/kg of paracetamol per injection, that is, 1.5 ml/kg. The maximum daily dose should not exceed 60 mg/kg body weight. The minimum interval between administrations should be at least 4 hours. In adults and children with a body weight of 50 kg, a single dose is 1000 mg of paracetamol, the maximum daily dose is 4 g. The interval between administration of the drug should be at least 4 hours.

Conclusion

It should be emphasized that Infulgan is the only antipyretic drug recommended for intravenous administration in childhood. Its advantages (rapid onset of action (15 min), gradual decrease in temperature, 100% bioavailability, predictable plasma concentration, ease of dosing and various forms of release) create conditions for its widespread use, especially in emergency care settings.

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