FEVERISH CONDITIONS IN CHILDREN WITH ACUTE RESPIRATORY DISEASES

Kudratova Gulsara Najmitdinovna,
Kholmuradova Zilola Ergashevna
Samarkand State Medical University. Samarkand. Uzbekistan.
zilola.xolmuradova86@mail.ru

ANNOTATION

Increased body temperature is the most common and one of the most important symptoms of childhood diseases. Feverish conditions in children are the most common reason for visiting a doctor, although many parents often try to reduce elevated body temperature in children on their own by using antipyretic medications. Treatment with over-the-counter drugs, of course, also requires monitoring, especially from the point of view of the safety of therapy. Therefore, the treatment of febrile conditions is still a pressing problem in pediatrics. It is now known that in response to the influence of various pathogenic stimuli, a restructuring of temperature homeostasis occurs, aimed at increasing body temperature in order to enhance the natural reactivity of the body. This increase in temperature is called fever.

Key words: *childhood diseases, fever, treatment.*

INTRODUCTION. Fever is considered as a protective-adaptive reaction of the body that occurs in response to exposure to pathogenic stimuli and is characterized by a restructuring of thermoregulation processes, leading to an increase in body temperature and stimulating the natural reactivity of the body. The biological significance of fever is to increase immune defense. An increase in body temperature leads to increased phagocytosis, increased synthesis of interferons, activation and differentiation of lymphocytes and stimulation of antibody genesis. Increased body

temperature prevents the proliferation of viruses, cocci and other microorganisms. However, the protective-adaptive nature of fever persists only with a relatively small increase in temperature. Hyperthermia can become one of the unfavorable pathogenetic factors in the course of the disease, and sometimes the cause of a fatal outcome. It should be especially noted that even with the same level of hyperthermia, fever in children can occur differently. So, if heat transfer corresponds to heat production, this indicates an adequate course of fever and is clinically manifested by the child's relatively normal state of health, pink or moderately hyperemic skin color, moist and warm to the touch ("pink fever"). This type of fever often does not require the use of antipyretics. 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 ("pale fever") are noted. These children usually require antipyretic drugs in combination with vasodilators and antihistamines (or antipsychotics). One of the clinical variants of the unfavorable course of fever is a hyperthermic state, which in young children in most cases is caused by infectious inflammation and is accompanied by severe toxicosis. In this case, there is a persistent (6 hours or more) and significant (above 40°C) increase in body temperature, accompanied by impaired microcirculation, metabolic disorders and progressively increasing dysfunction of vital organs and systems. The development of fever against the background of acute microcirculatory metabolic disorders underlying toxicosis leads to decompensation of thermoregulation with a sharp increase in heat production and inadequately reduced heat transfer. All this is associated with a high risk of developing metabolic disorders and cerebral edema and requires the urgent use of complex emergency therapy. Antipyretic therapy, especially in young children, has undergone significant changes in recent years. In accordance with the WHO recommendations "Treatment of fever in acute respiratory infections in children" (WHO, 1993) and domestic recommendations, antipyretic drugs should be prescribed when the child's temperature exceeds 39.C (measured rectally) or 38.5 C (measured subaxillary). Exceptions include children at

risk of developing febrile seizures, children with severe pulmonary or cardiovascular disease, and children in the first 2 months of life. When choosing analgesics-antipyretics for children, it is especially important to focus on highly effective drugs with the lowest risk of adverse reactions. Currently, only ibuprofen and paracetamol fully meet the criteria of high efficiency and safety and are officially recommended by the World Health Organization and national programs in pediatric practice as antipyretics. It should be noted that non-opioid analgesics (analgesics-antipyretics) still remain one of the most used drugs in pediatrics. This group of drugs has a unique combination of antipyretic, anti-inflammatory, analgesic, and antithrombotic mechanisms of action, which potentially make it possible to control the main symptoms of many diseases. At the same time, the presence of such a range of positive effects is not observed in any other group of drugs. However, despite some common properties, drugs from the group of analgesics-antipyretics differ both in effectiveness, breadth of the therapeutic spectrum, and in the degree of likelihood of developing undesirable reactions. Currently, the most important condition for the use of drugs in children is the absence of significant (serious) adverse reactions, proven by large-scale clinical studies. The first scientific report on the antipyretic effect of a drug obtained from willow bark was made in the middle of the 18th century. 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 30s of the last century, led to the creation of several pharmacological groups of non-opioid analgesics, which are divided into non-steroidal anti-inflammatory drugs (NSAIDs) and “simple analgesics” (acetaminophen). Acetaminophen (paracetamol) is not included in the group of NSAIDs, since it has virtually no anti-inflammatory properties. The main mechanism of action of analgesics-antipyretics, which determines their effectiveness, is the suppression of the activity of cyclooxygenase, an enzyme that regulates the conversion of arachidonic acid into prostaglandins, prostacyclin and

thromboxane. It has been established that there are two isoenzymes of cyclooxygenase. Thus, cyclooxygenase-1 directs the metabolic processes of arachidonic acid to carry out physiological functions: the formation of prostaglandins that have a cytoprotective effect on the gastric mucosa, the regulation of platelet function, microcirculatory blood flow, etc. Cyclooxygenase-2 is formed only during inflammatory processes under the influence of cytokines. During inflammation, the metabolism of arachidonic acid is significantly activated, the synthesis of prostaglandins, leukotrienes, the release of biogenic amines, free radicals, nitric oxide, etc. increases, which causes the development of the early stage of inflammation. Blockade of cyclooxygenase in the central nervous system by analgesics-antipyretics leads to an antipyretic and analgesic effect (central action of the drug), and a decrease in the content of prostaglandins at the site of inflammation leads to an anti-inflammatory effect and, by reducing pain reception, to an analgesic effect (peripheral effect). The analgesic, anti-inflammatory and antipyretic activity of non-opioid analgesics has been proven in numerous controlled trials that meet the standards of “medicine evidence” (level A). They are widely used for feverish conditions, acute and chronic pain, rheumatic diseases and many others. It is noteworthy that most patients use over-the-counter dosage forms. Despite the high effectiveness of analgesics and antipyretics, their use in children is not always safe. Thus, in the 70s of the last century, convincing evidence appeared that the use of acetylsalicylic acid (aspirin) for viral infections in children may be accompanied by Reye’s syndrome, characterized by toxic encephalopathy and fatty degeneration of internal organs, mainly the liver and brain. In addition, acetylsalicylic acid increases the risk of developing inflammatory changes in the gastrointestinal tract, disrupts blood clotting, increases vascular fragility, and in newborns it can displace bilirubin from its connection with albumin and thereby contribute to the development of bilirubin encephalopathy. At the same time, data on side effects of other antipyretics were accumulating. Thus, amidopyrine, due to its high toxicity, was excluded from the range of drugs. Analgin can inhibit hematopoiesis up to the development of fatal agranulocytosis, which contributed to a sharp limitation of its use in many countries of

the world (International Agranulocytosis and Aplastic Anaemia Study Group, 1986. At temperatures above 40 C, a lytic mixture is used intramuscularly, which usually includes 0.5 - 1. 0 ml of a 2.5% solution of aminazine, 0.5 - 1.0 ml of a solution of suprastin) and a 10% solution of analgin - 0.2 ml per 10 kg of body weight. It is assumed that inhibition of the activity of cyclooxygenase-2 is one of the important mechanisms of the clinical effectiveness of analgesics, and cyclooxygenase-1 is one of their toxicity (primarily in relation to the gastrointestinal tract). In this regard, along with “standard” (non-selective) NSAIDs, which equally suppress the activity of both isoforms of cyclooxygenase, selective cyclooxygenase-2 inhibitors have been created. However, these drugs were not without side effects. It has been established that the selective NSAID nimisulide (Nise and Nimulid) causes a significantly higher incidence of serious side effects when compared with ibuprofen and paracetamol in average therapeutic doses. The use of nimisulide for the treatment of fever and pain syndromes in pediatric practice is unacceptable, since the risk of developing possible adverse reactions is much higher than that of ibuprofen and paracetamol. Thus, of all ibuprofen preparations, only Nurofen for children (original drug) can be used in children from 3 months of age without a prescription, while Ibufen (generic) is allowed only in children older than one year. Thus, when choosing analgesics-antipyretics for children, it is especially important to focus on highly effective drugs with the lowest risk of adverse reactions. Currently, only ibuprofen and paracetamol fully meet the criteria of high efficiency and safety and are officially recommended by the World Health Organization and national programs in pediatric practice as antipyretics. Paracetamol and ibuprofen can be prescribed to children from the first months of life (from 3 months of age - without a prescription). Recommended single doses: paracetamol - 15 mg/kg, ibuprofen - 7.5-10 mg/kg (in dosage forms intended for children). Repeated use of antipyretics is possible no earlier than after 4–5 hours (Nurofen suspension for children is valid for up to 8 hours), but no more than 4 times a day. It should be noted that the mechanism of action of ibuprofen and paracetamol is somewhat different. Paracetamol (Panadol, Calpol, etc.) has an antipyretic, analgesic and very slight anti-inflammatory

effect, since it blocks cyclooxygenase mainly in the central nervous system and does not have peripheral activity. Side effects are most often caused by incorrect dosing of the drug or overdose (sometimes intentional) and are associated with liver damage. However, therapeutic doses of paracetamol are generally safe, which allows it to be widely used in pediatric practice as an antipyretic. Ibuprofen (Nurofen, Nurofen for children, Ibufen, etc.) is a non-steroidal anti-inflammatory drug with pronounced antipyretic, analgesic and anti-inflammatory properties. Ibuprofen has a dual analgesic effect - peripheral and central. The analgesic effect is already evident at a dose of 5 mg/kg and is significantly more pronounced than that of paracetamol. This makes it possible to effectively use ibuprofen for mild to moderate sore throat, pain due to tonsillitis, acute otitis media, toothache, teething pain in infants, as well as to relieve post-vaccination reactions in a larger number of children. It is known that side effects when taking NSAIDs are observed mainly in the gastrointestinal tract (abdominal pain, dyspeptic syndrome, NSAID gastropathy), less often in the form of allergic reactions, a tendency to bleeding, and renal dysfunction is extremely rare. It is known that aspirin and NSAIDs can provoke bronchospasm in persons with aspirin intolerance, since they inhibit the synthesis of prostaglandin E2, prostacyclin and thromboxanes and contribute to an increase in the synthesis of leukotrienes and paracetamol when used in the above doses.

The best option in pediatric practice is to prescribe the original drug ibuprofen - Nurofen for children; it can be prescribed without a prescription to children from 3 months of age, and if earlier prescription is necessary - only under the supervision of a doctor.

Thus, the treatment of acute respiratory infections in children is an urgent but challenging task. Complex therapy should be based on the main etiological and pathogenetic factors of the disease, and the use of modern pharmacological drugs ensures the effectiveness of treatment. In case of severe and/or complicated course, the child requires hospitalization; timely implementation of preventive measures can reduce the frequency of respiratory infections in children. The best system for

preventing acute respiratory infections in children is the formation of their own adequate immune response. A healthy lifestyle, a rational daily routine, good nutrition, and a variety of hardening programs contribute to this. Prevention of respiratory infections involves limiting the child's contact with people with influenza and ARVI, carrying out sanitary and hygienic measures, and increasing the child's time in the air. The main methods of increasing a child's resistance to infectious agents is hardening.

Hardening is a system of measures aimed at increasing the stability of genetically predetermined defense mechanisms and adapting the body to many factors so that daily and seasonal changes in temperature, atmospheric pressure, etc. do not cause sudden changes in the growing body. Systematic contrast air or water hardening is accompanied by an increase in the body's resistance to environmental temperature fluctuations and an increase in the body's immune reactivity. The maximum duration of hardening procedures should not exceed 10–20 minutes; its regularity and gradualness are much more important. It is good to combine hardening procedures with gymnastics and chest massage. One of the most important preventive measures is vaccination. Frequent ARVI cannot be a reason to avoid vaccinations. After ARVI, like other acute diseases, vaccinations can be carried out after 2-3 weeks. after temperature normalization. For specific prevention of influenza in children, subunit and split vaccines are recommended: Grippol (Russia), Agrippal, Begrivak (Germany), Vaxigrip (France), Influvac (Netherlands), Fluarix (Germany). Immunity is developed 14 days after vaccination, it is short-term (6–12 months) and type-specific, which requires annual vaccinations. The preventive effectiveness is 70–90%, and when infected with other types of influenza, the disease occurs in a milder form.

CONCLUSION. Acute respiratory infections remain the most common and most widespread infectious diseases of childhood. A significant number of respiratory infections are mild and do not require serious treatment measures. However, manifestations such as high fever in a child cause frequent visits to doctors. At the same time, although an insignificant, but still a certain proportion of respiratory infections pose a real threat to the health of a small patient and require decisive

measures, and sometimes resuscitation therapy and surgical treatment. Finally, we must not forget that a number of infectious diseases of the respiratory tract can leave a mark on the entire future life of a child, determining the unsatisfactory quality of his health for many years. The development of medical science and practice, the introduction of new diagnostic methods and the success of pharmacotherapy have significantly changed our understanding of known diseases and their nature, and expanded diagnostic and therapeutic capabilities. Currently, much attention is paid not only to the effectiveness, but also to the safety of treatment.

REFERENCES

1. Kudratova, G. ., & Xolmuradova , Z. . (2023). ERTA YOSHDAGI BOLALARDA SHIFOXONADAN TASHQARI PNEVMONIYADA KLINIK-ANAMNESTIK O‘ZGARISHLAR. *Евразийский журнал академических исследований*, *3*(2 Part 2), 39–42.

2. Ветров В.П., Длин В.В. и соавт. Рациональное применение антипиретиков у детей. Пособие для врачей. М: 2002;23.

3. Геппе Н.А., Зайцева О.В. Представления о механизмах лихорадки у детей и принципах жаропонижающей терапии. Рус мед журн 2003; 11:№1(173): 31–37.

4. Зайцева О.В., Щербакова М.Ю. Острые респираторные заболевания у детей: современные аспекты лечения и профилактики. Пособие для врачей. М: 2003.

5. Kudratova Gulsara Nazhmitdinovna, Kholmuradova Zilola Ergashevna, Ishkabulova Gulchekhra Dzhonkhurozovna, & Kodirova Shahlo Salahitdinovna. (2022). Costs Syndrome in Children, Causes, Comparative Diagnosis and Rational Therapy (Review of the article). *The Peerian Journal*, *6*, 8–13.

6. Kudratova Gulsara Najmitdinovna, Ishkabulova Gulchehra Dzhonkhurozovna, & Kholmuradova Zilola Ergashevna. (2023). CLINICAL AND ANAMNESTIC CHARACTERISTICS OF OUT-OF-HOSPITAL ZOTILJAM IN YOUNG

CHILDREN. *Galaxy International Interdisciplinary Research Journal*, *11*(2), 129–131.

7. Острые респираторные заболевания у детей: лечение и профилактика/ Научно-практическая программа Союза педиатров России. М: Международный фонд охраны здоровья матери и ребенка 2002;

8. Таточенко В.К. Педиатру на каждый день. Справочник по лекарственной терапии. М: 2002; 252.

9. Najmitdinovna K. G., Ergashevna K. Z. Acute Bronchiolitis in Children //Eurasian Research Bulletin. – 2022. – Т. 12. – С. 38-42.

10. Кудратова , Г., & Холмурадова , З. . (2022). ШИФОХОНАДАН ТАШҚАРИ ЗОТИЛЖАМ БИЛАН КАСАЛЛАНГАН БЕМОРЛАРДА КОМОРБИД ПАТОЛОГИЯНИНГ ТУЗИЛИШИ. ЎТКИР ДАВРДА ЮРАК-ҚОН ТОМИРНИНГ ЎЗГАРИШИ. *Евразийский журнал медицинских и естественных наук*, *2*(9), 11–15.