

Ministry of Health of Ukraine

Bogomolets National Medical University

GUIDELINES

to practical classes for students

Educational discipline: EQ 25 Pediatrics with children's infectious diseases.

Field of knowledge: 22 "Health care"

Specialty: 222 "Medicine"

Department of Pediatrics № 2

Approved at the department meeting dated 26.08.24, protocol № 1

Reviewed and approved by: Cycle Methodical Commission on

Pediatric Disciplines 29.08.2024 Protocol №1

Topic: Differential diagnosis of bronchial obstruction syndrome in children. Emergency care for a severe attack of bronchial asthma and anaphylaxis in children.

Competences.

The student should know:

- The subject field of pediatrics (prevention, diagnosis and treatment of diseases in children of various ages) and to understand professional activity (GC4): causes, mechanisms of development, diagnosis and provision of assistance to children of various ages with various clinical variants of the course of broncho-obstructive syndrome and its complications in children in conditions specialized and primary care.
- examination methods and management tactics for children of different ages with broncho-obstructive syndrome (bronchiolitis, acute obstructive bronchitis, bronchial asthma).

Skill :

- Collect data on the patient's complaints, medical history, and life history according to the standard scheme of the patient's survey, according to the established algorithms, conduct and evaluate the results of the physical examination of children of various ages with broncho-obstructive syndrome. (PLO1)
- Evaluate information about the diagnosis, applying a standard procedure based on the results of laboratory and instrumental studies of children of various ages with respiratory pathology. (PLO2)
- Identify the leading clinical symptom or syndrome. Establish the most likely or syndromic diagnosis of the disease. Assign a laboratory and/or instrumental examination of a sick child. Carry out differential diagnosis of diseases in children of different ages. Establish preliminary and clinical diagnosis in children of different ages with broncho-obstructive syndrome. (PLO3)
- Determine the principles and nature of treatment for broncho-obstructive syndrome in children of different ages. (PLO4)
- To determine the tactics of providing emergency medical care in case of a severe course of bronchial asthma and asthmatic condition in children of different ages. (PLO 5)
- Provide emergency medical care for acute respiratory failure in children of various ages. (PLO6)

The student must be able:

- Ability to collect medical information from children of various ages with respiratory pathology and analyze clinical data (PCS1).
- Determine the necessary list of laboratory and instrumental studies and evaluate their results in children of different ages with broncho-obstructive syndrome (PCS 2)
- Establish a preliminary and clinical diagnosis for various clinical variants of the course of broncho-obstructive syndrome in children of different ages (PCS 3)
- Determine the principles and nature of treatment of various clinical variants of broncho-obstructive syndrome in children of different ages (PCS 4)

The student must demonstrate:

- Ability to apply knowledge in practical situations (GC 3). 2-3
- Ability to work in a team (GC 7).

- Ability to interpersonal interaction (GC 8).

The student must have the following skills:

- Collect medical information about the patient and analyze clinical data (PCS 1).
- Provision of emergency medical care in outpatient and inpatient settings (PCS 8)
- Performing medical manipulations (PCS 10)

(Note: GC - general competences; PCS - professional competences of the specialty

PLO – program learning outcomes)

Didactic purpose:

- To ensure that students learn etiopathogenesis, diagnosis and differential diagnosis of diseases in various clinical variants of broncho-obstructive syndrome.
- Control the degree of assimilation of the algorithm for providing medical care for bronchial asthma and emergency care for acute respiratory failure and asthmatic conditions.
- Form students' skills and abilities to assess the child's condition; determination of treatment tactics and provision of emergency care; appointment and follow-up.

Equipment: dolls, phantoms, documentation (stories of an inpatient f.003, history of child development, f.112), medicines, instructions, tools for parenteral administration of medicines, textbooks, manuals, handbooks, methodical recommendations, algorithms for performing practical skills. Academic journal, student's workbook.

Lesson plan and organizational structure

The name of the stage	Description of the stage	Levels of assimilation	Time, 5.5 ac.h
1. Preparatory	1.1. Organizational issues. 1.2. Individual oral survey. 1.3. Formation of motivations 1.4. Control of the initial level of knowledge: Testing; checking home preparation for classes, workbooks; pre-auditory independent work of students	B B	15-20% 40 min

"Bronchial asthma in children", 2021.

Task 2. Airway obstruction testing in children after 5 with the help of:

- A. Spirometry
- B. X-rays
- C. Skin samples
- D. Control of blood oxygen saturation
- E. Blood tests (eosinophilia, increased level of immunoglobulin E)

The correct answer is: A - spirometry.

In children 5 years of age and older, lung function testing includes measuring airway obstruction using spirometry. In patients with normal spirometry, the assessment of airway reactivity is significantly better than when using other tests in the differentiation of patients with BA.

Reference: Unified clinical protocol of primary and secondary (specialized) medical care "Bronchial asthma in children", 2021.

Bronchial asthma in children. Tutorial. Under the editorship Prof. V.G. Maidannyka and Prof. O.I. Smiana Amounts of 2017 p. 56

Task 3. Prescribe the basic treatment of BA - step 2:

- A. Low-dose ICS (Inhaled corticosteroid) and short-acting β_2 -agonists
- B. ICS medium doses and β_2 -agonists of prolonged action
- C. System Glucocorticoid
- D. ICS and ALR
- E. Broncholytics

The correct answer is: A – low-dose ICS and short-acting β_2 -agonists.

The basic therapy of bronchial asthma depends on the frequency of symptoms. In the presence of daytime symptoms more than 2 times a month, treatment begins with step 2, when low-dose ICS and short-acting β_2 -agonists are used and bronchial asthma is controlled.

Reference: Unified clinical protocol of primary and secondary (specialized) medical care "Bronchial asthma in children", 2021.

Task 4. Bronchial asthma of moderate severity is well controlled:

- A. At the first step of basic therapy
- B. At the second step of basic therapy
- C. At the third step of basic therapy
- D. At the fourth step of basic therapy
- E. At the fifth step of basic therapy

Correct answer: C - at the third step of basic therapy.

The degree of severity of BA is assessed retrospectively by the level of therapy (over several months) required to control symptoms and exacerbations. The degree of severity is not a constant characteristic of the patient and changes over time (under the influence of therapy).

Reference: Unified clinical protocol of primary and secondary (specialized) medical care "Bronchial asthma in children", 2021.

Bronchial asthma in children. Tutorial. Under the editorship Prof. V.G. Maidannyka and Prof. O.I. Smiana Amounts of 2017 p. 56

Task 5. From what age can children be pre-tested?

- A. Children cannot be pre-tested
- B. After 1 year
- C. After 5 years

- D. To children of school age
- E. There is no age limit

The correct answer is E - there is no age limit.

Prick tests are the gold standard in the diagnosis of allergic diseases. It is performed for recurrent broncho-obstructive syndrome in children, recurrent laryngospasm in children, allergic dermatitis, bronchial asthma with an allergic phenotype, etc.

Reference: Bronchial asthma in children. Tutorial. Under the editorship Prof. V.G. Maidannyka and Prof. O.I. Smiana Amounts of 2017 p. 56

Exercise

1. The girl is 11 years old, has been suffering from bronchial asthma for 3 years. Day attacks every day, night attacks once a week. A daytime attack develops after contact with a dog. On examination, the general condition is of medium severity. Additional muscles are involved in the act of breathing. Percussion over the lungs box sound, auscultatory breathing is hard, dry whistling rales on both sides. Measurement of the peak exhalation rate is 35% of the norm. Your diagnosis?

Correct answer: Bronchial asthma, moderate severity, attack period, respiratory insufficiency 2. The disease occurs after contact with allergens. Presence of paroxysmal cough, respiratory failure. Percussion over the lungs with a box sound, auscultatory harsh breathing, diffuse dry whistling rales - all these symptoms testify in favor of this diagnosis.

Reference: Pediatrics / Edited by O.V. Tyazhka – Vinnytsia: Nova kniga, 2018. – P. 14-262.

Bronchial asthma in children. Tutorial. Under the editorship Prof. V.G. Maidannyka and Prof. O.I. Smiana Amounts of 2017 p. 56

2. A 2-year-old child became acutely ill, with an increase in temperature to 38°C. Objectively: catarrhal manifestations, pale skin, perioral cyanosis, auxiliary muscles participate in the act of breathing. Percussion over the lungs box sound. Auscultatively hard breathing, dry whistling and mid-vesicular rales on both sides. Your diagnosis?

Correct answer: Acute obstructive bronchitis. This diagnosis confirms acute development, high fever, dry cough, and shortness of breath. Percussion over the lungs is a box sound, auscultatively hard breathing, dry whistling and mid-vesicular rales.

Reference: Fundamentals of pediatrics according to Nelson. Translation of the 8th English edition in 2 volumes. -2020. Pediatrics / Edited by O.V. Tyazhka - Vinnytsia: Nova kniga, 2018. - P. 14-262.

Literature

Fundamental:

1. Nelson Textbook of Pediatrics, 2-Volume Set (Nelson Pediatrics) 21st Edition by Robert M. Kliegman MD, Joseph St. Geme MD, 2020, 5932 p.
2. Pediatrics : textbook /O.V.Tiazhka [et al.]; ed by.: O.V.Tiazhka; National O. O. Bohomolets medical university. - 3th ed. reprint. - Vinnytsya : Nova Knyha Publishers, 2018. - 544 p.
3. Pediatrics [Text] : national textbook / T. O. Kryuchko [et al.] ; ed. by.: T. O. Kryuchko, O. Y. Abaturon ,2nd ed. revised. - Kyiv : Medicine Publishing, 2017. - 208 p.

Information resources:

1. Bronchiolitis in infants and children: Treatment, outcome, and prevention. Authors: Pedro A Piedra, MD Ann R Stark, MD. UpToDate. last updated: Jul 19, 2022.
<https://www.uptodate.com/contents/bronchiolitis-in-infants-and-children-treatment-outcome-and-prevention>
2. Pediatric Bronchitis. Author: Patrick L Carolan, MD; Medscape. Updated: Oct 11, 2019
<https://emedicine.medscape.com/article/1001332-overview>
3. Pediatric Asthma. Author: Girish D Sharma, MD, FCCP, FAAP. Updated: Dec 20, 2021
<https://emedicine.medscape.com/article/1000997-overview>

Questions for student self-preparation for practical training:

1. Define bronchial asthma.
2. Pathogenesis of BA.
3. BA Clinic.
4. AFO of the respiratory system in children, which contribute to the development of broncho-obstructive syndrome.
5. Diagnosis of bronchial asthma.
6. Peculiarities of instrumental methods of examination in children with BA.
7. Differential diagnosis of broncho-obstructive syndrome in children.
8. Treatment of bronchial asthma.
9. Pathogenetic therapy of bronchial asthma.
10. Emergency care for an attack of bronchial asthma.

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