MINISTRY OF HEALTH OF UKRAINE
ZAPORIZHZHIA STATE MEDICAL UNIVERSITY

Department of paediatrics infectious diseases

NEUROINFECTIONS AND OTHER INFECTIONS WITH AIR-DROPLET TRANSMISSION IN CHILDREN

Manual for the independent auditorium work of English-speaking 6 years students

Zaporizhzhia
2021

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AUTHORS:

Usachova O. V., MD, PhD Professor;

Konakova O. V., MD, PhD, Associate Professor;

Pakholchuk T. M., MD, PhD, Associate Professor;

Silina Ye. A., MD, PhD, Assistant;

Dralova O. A., MD, Assistant.

REWIEWERS:

Riabokon O.V., MD, PhD Professor, Head of the Department of Infectious diseases of Zaporizhzhia State Medical University.

Givitsa D. J., MD, PhD, Associate Professor, Head of the Department of Infectious Diseases of Zaporizhzhia Medical Academy of postgraduate education.

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МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
ЗАПОРІЗЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ

Кафедра дитячих інфекційних хвороб

НЕЙРОІНФЕКЦІЇ ТА ІНШІ ІНФЕКЦІЙНІ ЗАХВОРЮВАННЯ З ПОВІТРЯНО-КРАПЕЛЬНИМ ШЛЯХОМ ПЕРЕДАЧІ У ДІТЕЙ

Навчальний посібник з самостійній роботі для англомовних студентів 6 курсу

Запоріжжя
2021

Затверджено на засіданні Центральної методичної ради ЗДМУ

(Протокол № від 2021 р.)

АВТОРИ:

Усачова О. В. – д-р мед. наук, професор;

Конакова О. В. - анд. мед. наук, доцент;

Пахольчук Т. М. - канд. мед. наук, доцент;

Сіліна Є. А. – канд. мед. наук, асистент;

Дралова О. А. - канд. мед. наук, асистент.

РЕЦЕНЗЕНТИ:

Рябоконь О. В. - д-р мед. наук, професор, завідувач кафедри інфекційних хвороб ЗДМУ;

Живиця Д. Г. – д-р мед. наук, доцент, завідувач кафедри інфекційних хвороб ДЗ ОДА «ЗМАПО».

Нейроінфекції та інші інфекційні захворювання з повітряно-крапельним шляхом передачі у дітей: навч. посіб. з самостійній роботі для англомовних студентів 6 курсу / О. В.Усачова [та ін.]. – Запоріжжя, 2021. – 75 с.

CONTENTS

FOREWORD

"The needs of children should not be made to wait."

John F. Kennedy, 1963

Medicine is an ever-changing science. As new research and clinical experience broaden our knowledge, changes in treatment and drug therapy are required. The authors of this work have checked with sources believed to be reliable in their efforts to provide information that is complete and generally in accord with the standards accepted at the time of publication.

In modern medicine, the discipline paediatric infectious diseases are an important medical specialty. The successful prevention of infections with air-droplet route and тeuroinfections in children, enteroviral infections and poliomyelitis has made a major contribution to the improvement of public health. Understanding the biology of causative agents and the pathogenesis is an essential step in achieving control and elimination of disease. Today paediatric infectious diseases research is closely interconnected with other disciplines.

This manual addresses vaccination, historical, epidemiological and sociocultural issues as well as clinical and molecular biological aspects of infections with air-droplet route and тeuroinfections in children, enteroviral infections and poliomyelitis. New insights into the pathogenesis of paediatric infectious diseases are presented and an update on diagnostics, prevention and treatment of infections with air-droplet route and тeuroinfections in children, enteroviral infections and poliomyelitis is provided. The role of emerging new pathogens and antibiotics therapy is also pointed out. Finally, the future perspectives of paediatric infectious diseases are highlighted. Therefore, this manual aims for english-speaking 6 years students.

Work Program for 6-th year students

MODULE 2. PADIATRIC INFECTIOUS DISEASES

Module 6. Differential diagnosis airborne-droplet infections in children. Emergency conditions of the airborne-droplet infections in children.

Specific goals:

- Identify different clinical forms of airborne-droplet infectious diseases (measles, rubella, chickenpox, scarlet fever, pseudotuberculosis, diphtheria, infectious mononucleosis, mumps infection, pertussis, meningococcal infection, viral and bacterial meningitis, encephalitis, polio, influenza and ARI) in children of different ages
- Identify the tactics of patient with airborne-droplet infectious diseases in children
- Demonstrate the ability to conduct medical records of children with respiratory infections
- Planned investigation of sick child and interpret the results with the airborne-droplet infections
- To make differential diagnosis and estimate the previous clinical diagnosis of airborne-droplet infections
- Diagnose and provide emergency assistance during emergency conditions caused by airborne-droplet infections

Topic 19. Differential diagnosis of children with airborne-droplet infections. Diagnosis and treatment of emergency conditions at children's airborne-droplet infections

Leading clinical symptoms of airborne-droplet infections in children (measles, rubella, chickenpox, scarlet fever, pseudotuberculosis). Differential diagnosis of different forms of child airborne-droplet infection. Differential diagnosis of different syndromes, typical for children with airborne-droplet infections. Clinical management of patients, epidemic measures in the foci of infection and specific prevention of children with airborne-droplet infections.

Topic 20. Differential diagnosis in children neuroinfections

Leading clinical symptoms of meningococcal infection. Meningococcemia. Differential diagnosis of diseases with hemorrhagic rash (hemorrhagic vasculitis, thrombocytopenic purpura, etc.). Leading clinical symptoms of bacterial and viral meningitis, their complications and differential diagnosis. Clinical and laboratory characteristics of primary and secondary encephalitis, their complications and differential diagnosis. Clinical management of patients with meningitis and encephalitis.

Topic 21. Diagnosis and treatment of emergency conditions in children with neuroinfections

Leading clinical symptoms of infectious-toxic shock in case of meningococcal infection and edema-swelling of the brain in children with neuroinfections. Clinical management of patients with infectious-toxic shock and edema-swelling of the brain. Urgent care.

Topic 19. DIFFERENTIAL DIAGNOSIS OF THE INFECTIOUS DISEASES WITH THE SYNDROME OF THE EXANTHEM (SCARLET FEVER, MEASLES, RUBELLA, VARICELLA, HERPES ZOSTER, HERPES SIMPLEX, PSEUDOTUBERCULOSIS.

Duration: – 3 hours.

Actualizes of this problem: the rate of the diseases with the syndrome of the exanthema is still high and of course is especially severe in children at the early age. The district doctor must not only know how to determine the disease timely, but also learn how to use the methods of therapy, master the complex of anti-epidemic methods in the district to prevent the spreading of infectious diseases, leading to an epidemic outbreak.

Aim

To study the information about etiology, epidemiology, pathogenesis, pathophysiology, clinical manifestations, diagnosis, differential diagnosis, complications, prognosis, treatment, prevention of scarlet fever, varicella, measles, rubella, pseudotuberculosis. In description of these nosologic forms special attention is paid to questions of clinical picture in new-borns, in children of the 1 st year of life and also of differential diagnosis.6

1. Educational tasks

Students must to know:

1. To study information about epidemiology, pathogenesis of scarlet fever, varicella, measles, rubella, pseudotuberculosis.
2. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of scarlet fever, varicella, measles, rubella, pseudotuberculosis.
3. To teach students clinical peculiarities of scarlet fever, varicella, measles, rubella, pseudotuberculosis, meningococcemia in newborns and children of the 1 st year of life.
4. To discuss questions of complications, prognosis of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.

5. To study information about modern diagnostics of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.

6. To teach students to prescribe etiotropic and pathogenetic of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.

7. . To discuss questions of prevention and vaccine prophylaxis of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.

Students must to make (skills):

1. To ask the parents or the child about the complaints.

2. To ask the patients about the family history, the past history, the history of the present illness.

3. To prescribe to patients of the laboratory and instrumental investigations.

4. To value of the patient's result of the laboratory and instrumental investigations.

5. To make an initial diagnosis.

6. To make a differential diagnosis.

7. To make a complete diagnosis.

8. To apply a new method of treatment.

9. To elaborate of the prophylactic measures for prevention of children infection

2. Manual for the independent auditorium work

Starting level of knowledge:

Programme of microbiology, normal and pathologic physiology departments of Medical University.

Contents.

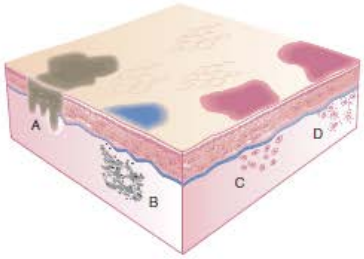
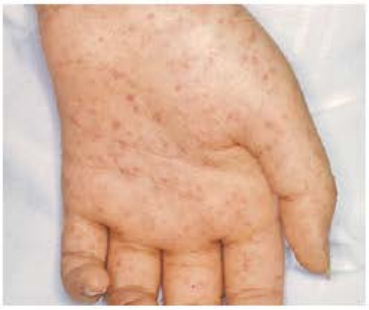
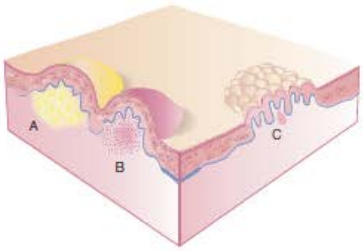
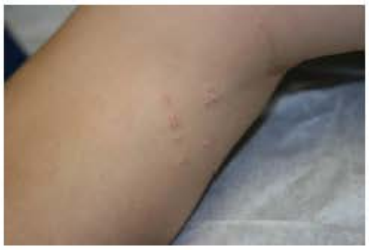
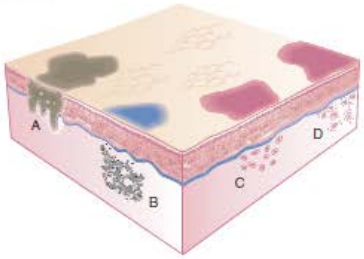
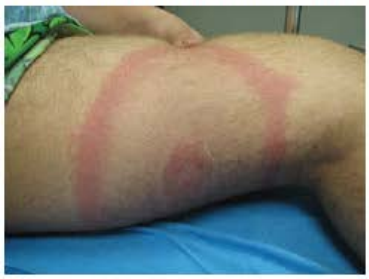
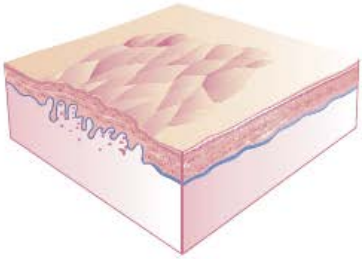
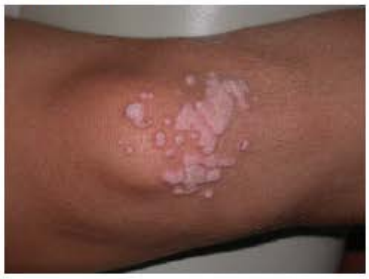
The determination of meaning of scarlet fever, varicella, measles, rubella, pseudotuberculosis. Etiology, epidemiology, pathogenesis of scarlet fever, varicella, measles, rubella, pseudotuberculosis. Clinical manifestations of scarlet fever, varicella, measles, rubella, pseudotuberculosis. Clinical peculiarities of scarlet fever,

varicella, measles, rubella, pseudotuberculosis in newborns and children of the 1 st year of life. Modern diagnostics of scarlet fever, varicella, measles, rubella, pseudotuberculosis. Diagnosis, differential diagnosis of scarlet fever, varicella, measles, rubella, pseudotuberculosis. Complications, prognosis of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children. Etiotropic and pathogenetic treatment of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children. Prevetion and vaccine prophylaxis of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.

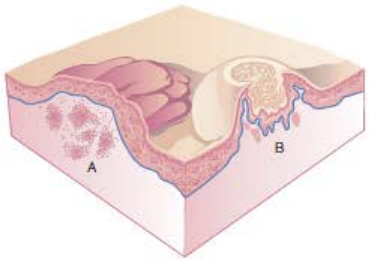
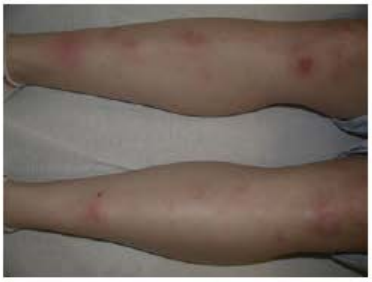
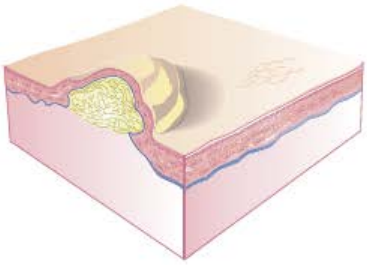
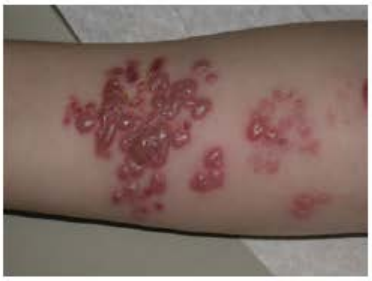
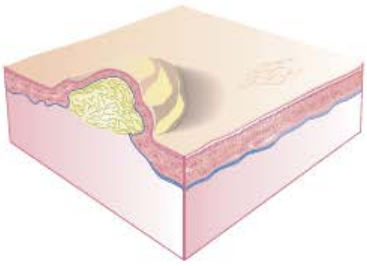
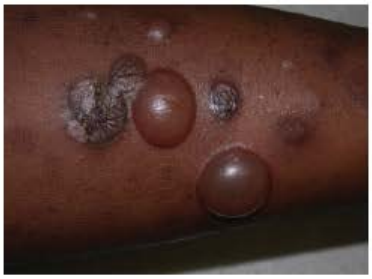
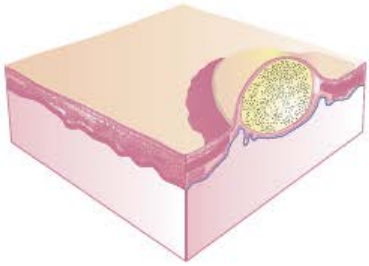
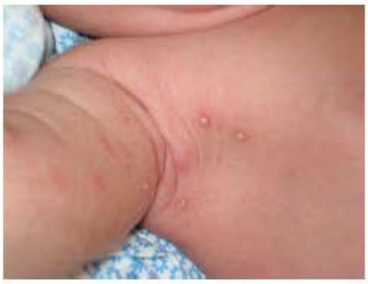
Diagnostic Categories of selected Infectious and Non-Infections Etiologies of Rashes

Diagnostic Category	Examples
Bacterial and mycobacterial infections	■ Cellulitis ■ Impetigo ■ Staphylococcal-scalded skin syndrome ■ Toxic shock syndrome ■ Ecthyma ■ Ecthyma gangrenosum ■ Meningococcemia ■ Rocky mountain spotted fever ■ Rickettsialpox ■ Cutaneous tuberculosis ■ Cutaneous anthrax ■ Nontuberculous (atypical) mycobacterial infections ■ Leprosy ■ Secondary syphilis ■ Ulceroglandular tularemia ■ Actinomycosis
Viral infections	■ Erythema infectiosum (parvovirus B19 infection) ■ Papular purpuric socks and gloves syndrome (parvovirus B19 infection) ■ Infectious mononucleosis (Epstein–Barr virus (EBV) infection) ■ Roseola infantum (human herpesvirus-6 and human herpesvirus-7 infection) ■ Rubeola (measles) ■ Hand-foot-and-mouth disease (coxsackie virus infection) ■ Herpangina (coxsackie virus infection) ■ Varicella ■ Herpes zoster ■ Cutaneous herpes and herpetic whitlow ■ Herpes labialis ■ Herpetic gingivostomatitis ■ Eczema herpeticum ■ Molluscum contagiosum ■ Warts (verruca vulgaris, verruca plana, verruca plantaris, condylomata acuminata) ■ Smallpox
Fungal infections	■ Dermatophyte infections (tinea capitis, tinea corporis, tinea pedis, onychomycosis) ■ Tinea versicolor ■ Cutaneous candidiasis ■ Subcutaneous mycoses (sporotrichosis) ■ Systemic mycoses (blastomycosis, histoplasmosis, coccidiomycosis) ■ Opportunistic mycoses (aspergillosis, mucormycosis, cryptococcosis)
Protozoal infections	■ Cutaneous leishmaniasis ■ Muocutaneous leishmaniasis
Reactive erythemas	■ Erythema multiforme ■ Urticaria ■ Serum sickness and serum sickness-like reactions ■ Erythema marginatum (acute rheumatic fever) ■ Erythema chronicum migrans (Lyme disease)
Hypersensitivity syndromes	■ Morbilliform drug eruption ■ Stevens–Johnson syndrome ■ Toxic epidermal necrolysis ■ Drug reaction with eosinophilia and systemic symptoms
Vasculitic diseases and purpura	■ Rocky mountain spotted fever ■ Erlichiosis ■ Purpura fulminans ■ Kawasaki disease ■ Hypersensitivity (leukocytoclastic) vasculitis

Common Morphologic Patterns of Dermatologic Disease

Morphology	Description	Examples
Primary lesions		
Macule 	A flat lesion <1 cm in diameter	Leukocytoclastic vasculitis 
Papule 	A raised lesion <1 cm in diameter	Molluscum contagiosum 
Patch 	A flat lesion >1 cm in diameter	Erythema chronicum migrans (Lyme disease) 
Plaque 	A raised lesion with a flat top >1 cm in diameter	Verucca vulgaris 

Common Morphologic Patterns of Dermatologic Disease

Morphology	Description	Examples
Nodule 	A raised lesion >1 cm in diameter	Erythema nodosum 
Vesicle 	A clear fluid-filled lesion <1 cm in diameter	Herpes zoster 
Bullae 	A fluid-filled lesion >1 cm in diameter	Impetigo 
Pustule 	A cloudy fluid-filled lesion <1 cm in diameter	Neonatal staphylococcal pustulosis 

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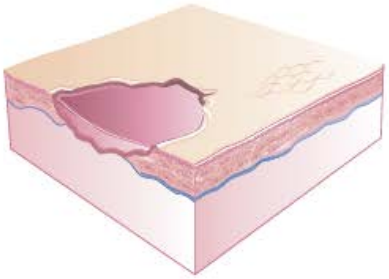
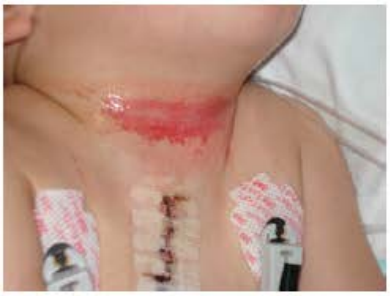
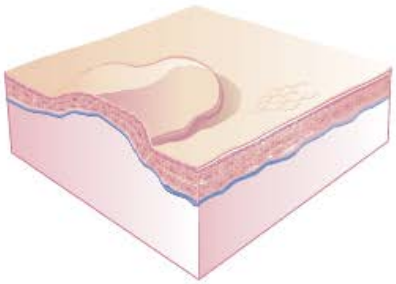
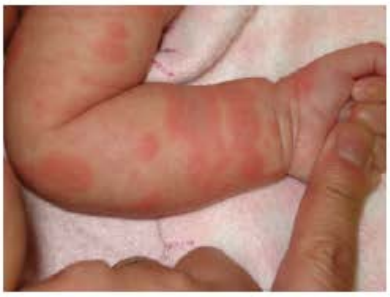
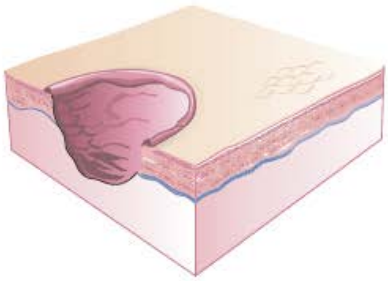
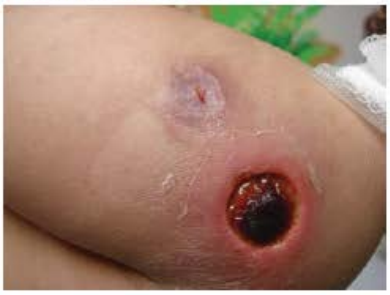
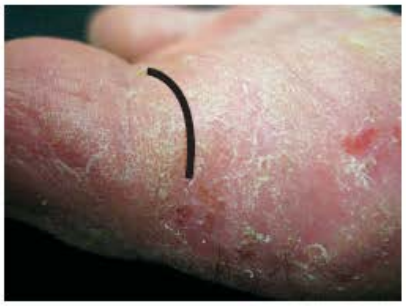
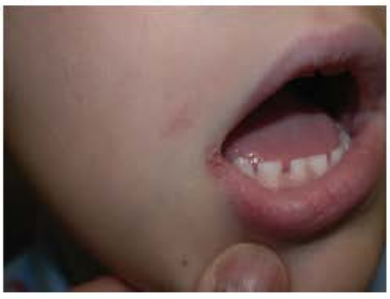
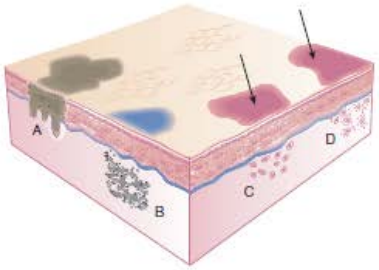
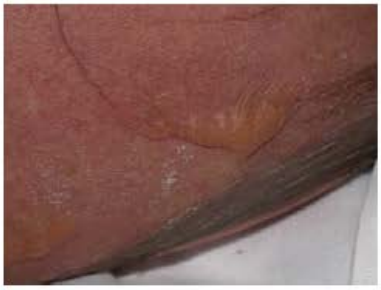
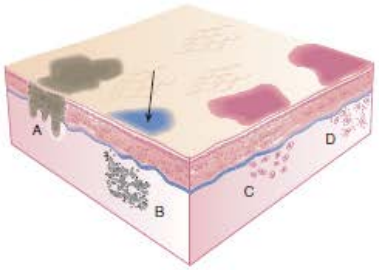
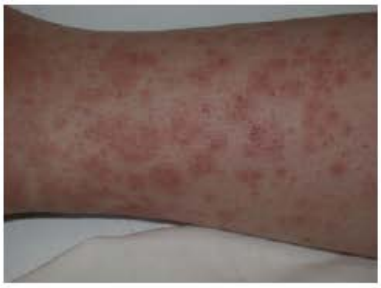
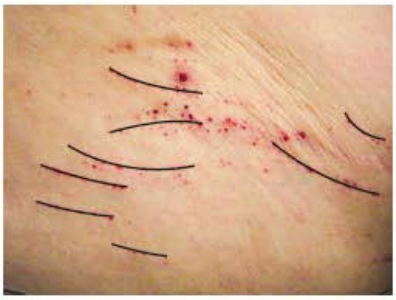
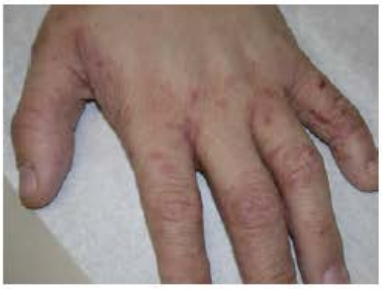
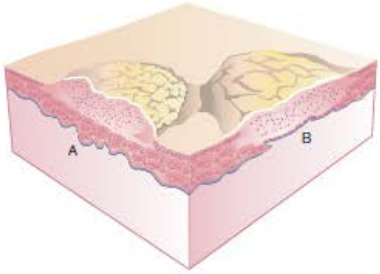
Common Morphologic Patterns of Dermatologic Disease

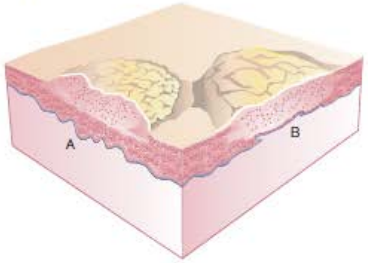
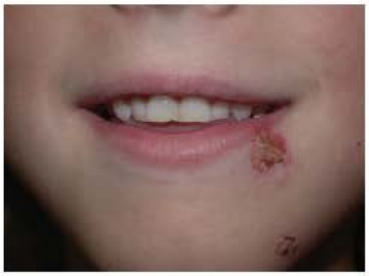
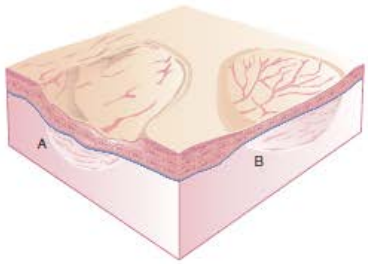
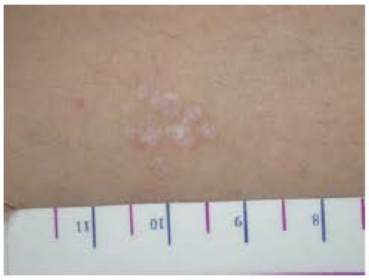
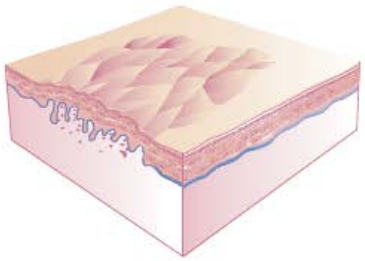
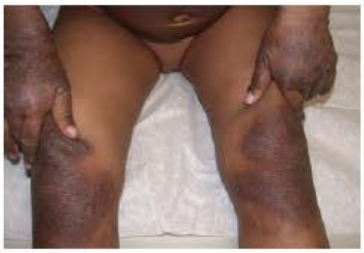
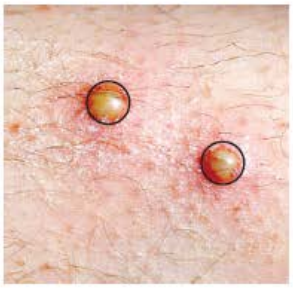
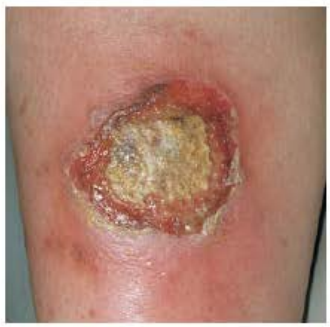
Morphology	Description	Examples
Erosion 	A loss of the epidermis (superficial)	Streptococcal intertrigo 
Wheal 	A transient edematous lesion, often with blanching or pallor centrally with surrounding erythema	Urticaria 
Ulcer 	A loss of the epidermis and part of the dermis and sometimes the subcutis (deep)	Echthyma gangrenosum 
Fissure 	A linear cleft or ulcer	Angular chelistis (*Candida albicans*) 

Common Morphologic Patterns of Dermatologic Disease

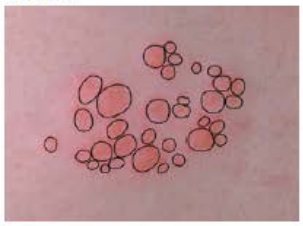
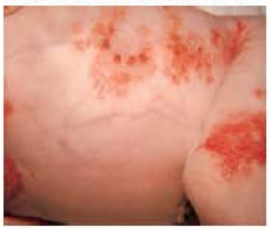
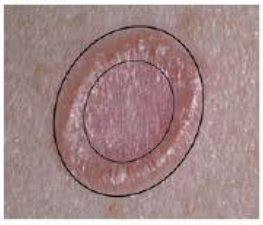
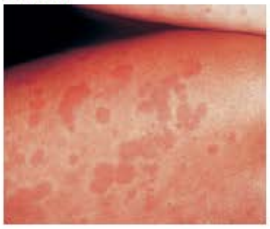
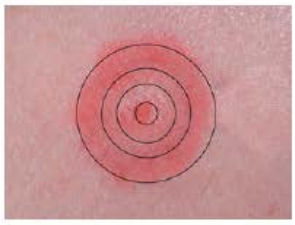
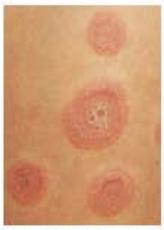
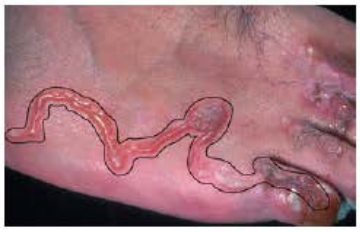
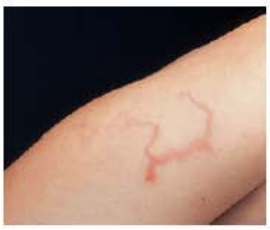
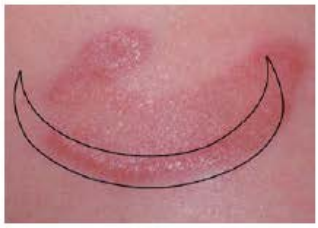
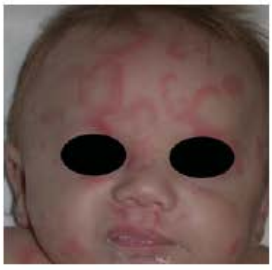
Morphology	Description	Examples
Erythroderma 	Confluent erythema resulting from vasodilation or capillary leak	Toxic epidermal necrolysis 
Purpura 	Nonblanchable erythema or violaceous areas	Cutaneous vasculitis 
Excoriation 	A superficial abrasion, often self-induced from scratching	Scabies 
Scale 	Superficial epidermal desquamation	*Tinia facei* 

(continued)

Common Morphologic Patterns of Dermatologic Disease

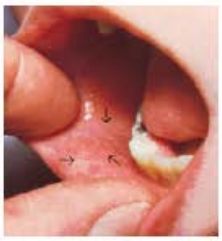
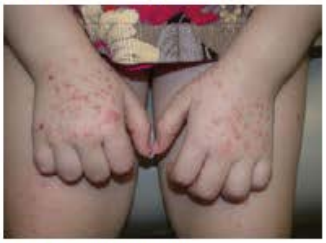
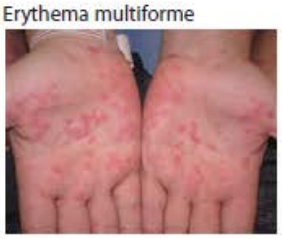
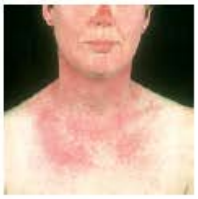
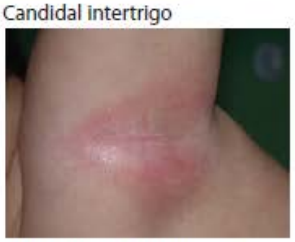
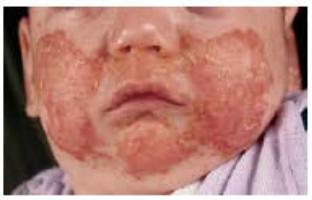
Morphology	Description	Examples
Crust	Dried exudate	Impetigo
		
Atrophy	Thinning of the skin that may involve the epidermis, dermis, or subcutis; may present with hypopigmentation and a fine, wrinkled appearance to the epidermis	Lichen sclerosis et atrophicus
		
Lichenification	Accentuation of normal skin markings with epidermal thickening and hyperpigmentation; results from chronic rubbing or scratching	Chronic atopic dermatitis
		
Shape and configuration		
Individual	Singly dispersed lesions	Ecthyma, *S. aureus*
		

Common Morphologic Patterns of Dermatologic Disease

Morphology	Description	Examples
Grouped 	Multiple similar lesions present within a localized area	Herpes simplex virus infection 
Annular 	Ring-shaped	Urticaria 
Targetoid 	"Bulls-eye" appearance with central dusky zone surrounded by a ring of pallor (edema) and a peripheral rim of erythema	Erythema multiforme 
Serpiginous 	A wavy, linear grouping of lesions	Cutaneous larva migrans 
Arcuate 	Incomplete rings and arcs	Urticaria 

(continued)

Selected Distribution Patterns of Dermatologic Disease

Distribution	Description	Examples
Enanthem	Affecting mucous membranes	Koplik spots (measles) 
Acral	Affecting the distal extremities and sometimes the head	Gianotti–Crosti syndrome 
Palmoplantar	Affecting the palms and soles	Erythema multiforme 
Photodistributed	Affecting areas exposed to sunlight; commonly the face, upper extremities	Polymorphous light eruption 
Intertriginous	Affecting skinfold areas such as the groin, axillae, and neck	Candidal intertrigo 
Periorificial	Affecting the periorbital, perioral, and sometimes the perianal areas	Acrodermatitis enteropathica 

Selected Diagnostic Tests of Importance in the Evaluation of a Rash

Diagnostic Test	Procedure	Comments
Potassium hydroxide (KOH) preparation	1. Clean skin with alcohol pad 2. Use a #15 blade or a glass slide to scrape the scale from the lesion; use tangential motion 3. Place scrapings on a glass slide 4. Add 10% KOH; either warm the slide gently with a flame or allow to sit at room temperature for 5 minutes to facilitate dissolution of epithelial cells. 5. Examine under 10× power; make sure the condenser is on low	Useful in confirming a candidal or malassezia or dermatophyte infection of the skin. Candida species will appear as budding yeast. Dermatophyte species will appear as refreactile, branching hyphae. The characteristic "spaghetti and meatballs" appearance of clusters of spores in association with septate hyphae is seen with tinea versicolor infections caused by *Malassezia furfur*.
Fungal culture	1. Use a toothbrush or culture swab to rub the lesion briskly 2. Plate on mycobiotic agar (contains chlorhexidine to inhibit nondermatophyte molds)	Useful for confirmation of superficial infections with dermatophyte molds and Candidal species.
Scabies preparation	1. Use a #15 blade to briskly scrape 3–4 lesions; pick a fresh lesion 2. Place a drop of mineral oil on a glass slide 3. Spread the scrapings on the slide and examine under 4× power	Scabies mites, eggs, and scybylla (feces) can be easily seen in positive preparations. To increase diagnostic yield, scrape several lesions.
Bacterial culture	1. Swab the skin with alcohol first; allow the skin to dry 2. Puncture or unroof the pustule with a sterile needle or #11 blade 3. Obtain specimen with culture swab	Most laboratories can culture and identify common pathogenic organisms such as Staphylococcus, Streptococcus, and Pseudomonas species. Uncommon organisms may require special culture media or growth conditions. Check with your clinical laboratory if you have any questions or are trying to isolate an unusual organism.
Tzanck preparation	1. Choose an intact vesicle or pustule, if possible 2. Unroof lesion 3. Briskly scrape the base of the lesion with a #15 blade and smear onto a glass slide 4. Stain with Wright's or Giemsa stain	The presence of multinucleated giant cells suggests a herpes virus infection such as herpes simplex virus (HSV) or varizella zoster virus (VZV). Mainly of historical interest and largely supplanted by rapid diagnostic tests such as direct fluorescent antibody test (DFA) and polymerase chain reaction (PCR).
HSV/VZV direct fluorescent antibody test (DFA), PCR, and viral culture	1. Choose an intact vesicle or pustule, if possible 2. Unroof lesion with a #15 blade 3. Briskly scrape the base of the lesion with a Dacron swab 4. Place in viral culture media or smear immediately on a glass slide	Check with your clinical laboratory to verify how the specimen should be transported. PCR not available in all clinical laboratories. Viral cultures may take several days to grow. Do not delay treatment if HSV or VZV infection is suspected.
Skin biopsy	May be performed as a shave biopsy for superficial epidermal processes or as a punch biopsy for processes suspected to involve the dermis or subcutis	Consult dermatologist who can select appropriate skin lesion and perform procedure. Special immunohistochemical stains, immunofluorescence, and in situ PCR as well as bacterial, fungal, viral, and mycobacterial cultures may be performed if indicated.
Nikolsky's sign	Using your index finger, firmly stroke away from the lateral border of a bullae	Epidermal blistering processes, such as Staphylooccal-scalded skin disease and toxic epidermal necrolysis, will demonstrate additional shearing of the skin and lateral extension of the blister.
Dermatographism	Using the wooden end of a cotton-tipped applicator, briskly stroke the skin of the upper back	Often positive in children with urticaria or atopic dermatitis; essentially a form of pressure urticaria.

4. Maps for independent work with literature for this topic

Main task Instruction Answers
Etiology What do you know about etiology of exanthema
Clinical manifestation Describe the clinical picture of exanthema
Diagnostic Clinical and laboratory methods of investigation of exanthema
Differential diagnostic Make differential diagnosis of exanthema
Treatment Prescribe an adequate therapy

5. Self-control for this topic

Control questions.

1. Ground the actuality of the problem in children, especially in children of the 1st year of life.
2. What do you know about epidemiology of scarlet fever, varicella, measles, rubella, pseudotuberculosis?
3. Describe the clinical picture of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children.
4. Describe the clinical picture of scarlet fever, varicella, measles, rubella, pseudotuberculosis in children of the 1 st years of life.
5. What do you know about clinical and laboratory methods of investigation in diagnostics of scarlet fever, varicella, measles, rubella, pseudotuberculosis?
6. To make differential diagnosis of the infectious diseases with the syndrome of the exanthem (scarlet fever, varicella, measles, rubella, pseudotuberculosis.
7. What do you know about complications and prognosis of scarlet fever, varicella, measles, rubella, pseudotuberculosis?
8. Prescribe an adequate therapy of scarlet fever, varicella, measles, rubella, pseudotuberculosis to children.

9. What do you know about prophylaxis of scarlet fever, varicella, measles, rubella, pseudotuberculosis?

Tests of the 2-nd level

Question № 1

The child of the age 3 years was admitted to a hospital in 2-nd day of a rash with a diagnosis: Measles, typical moderately form.

What treatment is it necessary to the patient?

A. Anntibiotics

B. Detoxication therapy

C. Desensibilication therapy and vitamins

D. Steroid therapy

E. Oxygen therapy

Question № 2

The child with measles will be infectious thoroughly:

A. 5-th day after the latter elements of rash.

B. 5-th day from a beginning of disease.

C. 5-th day after ending disease.

D. 5-th day from a beginning of the rash.

E. 5-th day after appearance pigmentation.

Question № 3

Main means of preventive maintenance of the measles among children is:

A. Introduction of the antimissiles immunoglobulin.

B. Duly dissociation contact.

C. Vaccination.

D. Application of the interpheron.

E. Vitamin therapy.

Question № 4

At the child of the 4 years was diagnosed scarlet fever, several form. For the third day of illness: high fever, necrotic tonsillitis, purulent lymphadenitis. What form of the scarlet fever has got this patient?

A. Toxic form of the scarlet fever.

B. Extrabuccal form of the scarlet fever.

C. Hypertoxic form of the scarlet fever.

D. Septic form of the scarlet fever.

E. Subclinical form of the scarlet fever.

Question № 5

At the child of the 5 years was diagnosed the typical form of scarlet fever.

What from listed antibiotics is more effective for treatment this patient?

A. Levomicetin.

B. Gentamicin.

C. Biseptol.

D. Polymicsin.

E. Penicillin.

Question № 6

At the child of the 4 years with varicella for 5 day from a beginning of the rush высыпания have been appeared dizziness, uncertainly when walking. Objectively: instability in a Romberg's pose, non-execution of the coordination tests, nistagm.

What complication of the varicella is most probably?

A. Poliradiculonevritis.

C. Encephalitis.

D. Neuvrotoxicosis.

E.Encephalopatia.

Question № 7

The pregnant woman on the 8-th week of pregnancy had contact to the patient with rubella. She was not immunized against rubella, the point data about transferred rubella in last are not present.

What investigation is necessary for determine of the right diagnosis?

A. Serological test.

B. Direct immunofluorecent.

C. Virologist test of blood

D. Virologist test of feces.

E. RNA of rubella.

Question № 8

At the girl of the 5 years in 2 weeks after transferred scarlet fever have been appeared pains in heart, extension of boundaries of heart to the left, the deaf tones, systolic noise on a top.

What complication of the scarlet fever has this child got?

A. Miocarditis.

B. Pericarditis.

C. Miocardiodistrophia.

D. Pancarditis.

E. «Scalatinal heart».

Question № 9

The child of the 6 years was contacted with patient with measles. Term of the revaccination against measles has approached.

Taking into account epidemiology anamnesis, this measure is necessary to conduct:

A. Immediately.

B. Through 1 month.

C. Through 2 months.

D. After expiry of the term of quarantine on measles

E. To not conduct in general.

Question № 10

Young woman gave birth to the child with inherent ugliness: defect of heart, cataract, microcephalic hydrocephalus, deafness. From anamnesis we are known, that on the 12-th week of pregnancy the mother had been ill with any virus disease.

What congenital infection is possible in the child?

A. Toxoplasmosis.

B. Cytomegalovirus infection.

C. Chlamydeous.

D. Rubella.

E. Measles.

Tests of the 3-rd level

Question № 1

The child of the 5 years old was treated in out-patient with diagnosis ARVI during 3 days. For the 4-th day on a face and neck have appeared pink maculopapular rush, whitish spots surrounded by a narrow band of hyperemia on the buccal mucosa on the line of opposition of the molar teeth.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 2

Young woman gave birth to the child with inherent ugliness: defect of heart, cataract, microcephalic hydrocephalus, deafness. From anamnesis we are known, that on the 12-th week of pregnancy the mother had been ill with any virus disease.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 3

The child of the 5 years was ill acutely with rise of temperature, appearance of a rash as maculopapuls, vesicles and brown crusts on a face, scalp, trunk and limbs.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 4

The child of the 3 years was ill acutely with increasing of the temperature up to 37.3oC, weakness, selections from a nose, appearing on all body of the papules rash in time. Objectively: catarrh of the upper respiratory tract, in the hard sky – enanthema, swelling of the suboccipital lymph nodes.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 5

At the child of the 3 years after overcooling on lips and around of a mouth have been appeared a small vesicles in groups. Subjective sensations are itch, pain and burning pain. The general common state is not infringed.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 6

At the girl of the 3years in 14 days after transferred of the scarlet fever has ben appeared macrohematuria, arterial pressure is180/120, edema on lower limbs. Daily diuresis is 200ml.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 7

At the child of the 9 years has been appeared red, round elements of the rast on the extensor surface of the limb, back, buttocks, abdomen and chest within a few hours. The rust lasts 2 days and disappears rapidly without leaving any pigmentation. Suboccipital lymph nodes are increased.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Question № 8

At the child of the 5 years: the temperature is 39oC, pain in a throat, the rash. Elements of rash are roseolas, cheeks are red, and the area around the mouth is pale, rash more intense in skin folds. Lacunars tonsillitis, “raspberry tongue”.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient.

Topic 20-21. DIFFERENTIAL DIAGNOSIS OF THE NEUROINFECTIOUS IN CHILDREN. DIAGNOSIS AND TREATMENT OF THE URGENT STATES IN CHILDREN WITH NEUROINFECTIOUS.

Duration: – 3 hours.

Actualizes of this problem: the rate of neuroinfectins and meningococcal infection is still high and of course is especially severe in children at the early age. The district doctor must not only know how to determine the disease timely, but also learn how to use the methods of therapy, master the complex of anti-epidemic methods in the district to prevent the spreading of infectious diseases, leading to an epidemic outbreak.

Aim

To study the information about etiology, epidemiology, pathogenesis, pathophysiology, clinical manifestations, diagnosis, differential diagnosis, complications, prognosis, treatment, prevention of neuroinfectious and meningococcal infection. In description of these nosologic forms special attention is paid to questions of clinical picture in new-borns, in children of the 1 st year of life and also of differential diagnosis.

1. **Educational tasks**

Students must to know:

1. To study information about epidemiology, pathogenesis of neuroinfectious and meningococcal infection.
2. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of neuroinfectious and meningococcal infection.
3. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of the meningitis.
4. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of the meningococcemia and the hypertoxic form of meningococcal infection.

5. To teach students clinical peculiarities of neuroinfectious and meningococcal infection in newborns and children of the 1 st year of life.
6. To discuss questions of complications, prognosis of neuroinfectious and meningococcal infection.
7. To study information about modern diagnostics of neuroinfectious and meningococcal infection in children.
8. To teach students to prescribe etiotropic and pathogenetic of neuroinfectious and meningococcal infection in children.
9. To teach students to prescribe etiotropic and pathogenetic treatment of the meningitis in children.
10.. To discuss questions of prevention and vaccine prophylaxis of neuroinfectious and meningococcal infection in children.
11. To study information about pathogenesis of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious.
12. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of infective-toxic shock (ITS), dessiminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious.
13. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of the hypertoxic form of meningococcal infection.
14. To teach students clinical peculiarities of infectiv-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children of the 1 st year of life with neuroinfectious.

15. To study information about diagnostics of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious.

16. To teach students to prescribe treatment of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrom in children with neuroinfectious.

17. To teach students to prescribe etiotropic and pathogenic treatment of the hypertoxic form of meningococcal infection in children.

Students must to make (skills):

1. To ask the parents or the child about the complaints.
2. To ask the patients about the family history, the past history, the history of the present illness.
3. To prescribe to patients of the laboratory and instrumental investigations.
4. To value of the patient's result of the laboratory and instrumental investigations.
5. To make an initial diagnosis.
6. To make a differential diagnosis.
7. To make a complete diagnosis.
8. To apply a new method of treatment.
9. To elaborate of the prophylactic measures for prevention of children infection

2. Manual for the independent auditorium work

Starting level of knowledge:

Programme of microbiology, normal and pathologic physiology departments of Medical University.

Contents.

The determination of meaning of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome,

convulsion syndrome. Pathogenesis of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious.. Clinical manifestations of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious. Diagnostics of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious. Treatment of infective-toxic shock (ITS), disseminated intravascular coagulation syndrome (DIC-syndrome), hypertermic syndrome, convulsion syndrome in children with neuroinfectious.

Pertinent History and Physical Examination

Important history of present illness

Fever, lethargy, irritability, headache, photophobia, neck pain or stiffness, mental status changes, focal neurologic deficits, seizures (especially focal, prolonged, recurrent)

Important past medical history

Immunocompromise, hemoglobinopathies, asplenia, chronic liver or renal disease, implanted hardware such as cochlear implants or ventriculoperitoneal shunt

Medications and allergies

Important elements of the physical examination

Assessment of airway, gag reflex, vital signs, and perfusion

Head including fontanel and head circumference

Eyes (include fundoscopic examination), ears, nose, and throat

Neck

Neurologic examination

Mental status: alertness, orientation

Skin examination for perfusion, petechiae, purpura

Etiology of Meningitis

Common

Enteroviruses
Neisseria meningitidis
Strep. pneumoniae
Group B streptococci
Escherichia coli
Haemophilus influenzae
Listeria monocytogenes

Less Common

Herpes simplex virus
Klebsiella spp. (and other Enterobacteriaceae)
Borrelia Burgdorferi
Candida spp..
Salmonella spp.
Mycobacterium tuberculosis
Pseudomonas aeruginosa
Staphylococcus aureus
Enterococcal spp.

Rare

Cysticercosis
Cryptococcus neoformans
Lymphocytic choriomeningitis
Mumps
Syphilis
Amoebae

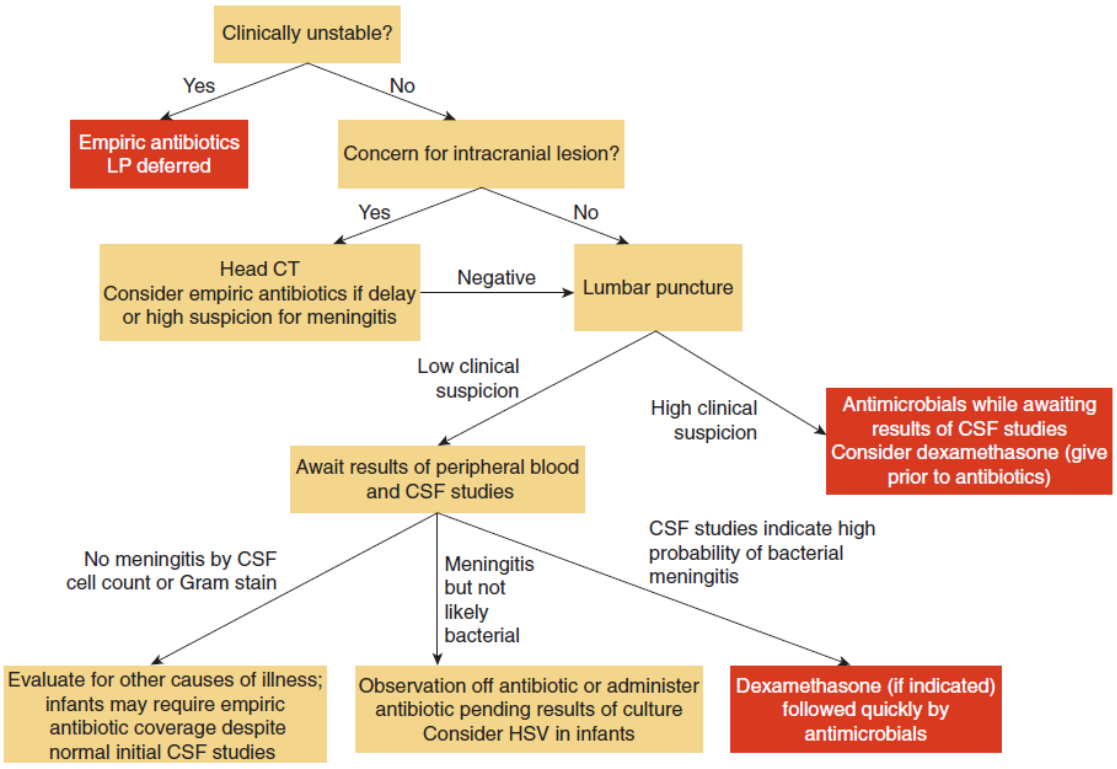


FIGURE 16–2 ■ Clinical approach to the patient with possible meningitis. (The decision to administer or delay administration of dexamethasone and empiric antimicrobials until after cranial imaging, lumbar puncture, or results of blood and CSF analysis will depend on the overall clinical appearance of the child and degree of suspicion for acute bacterial meningitis.)

Key Considerations for Evaluation and Management of Bacterial Meningitis

Step 1: General assessment

a) Assess vital signs and perfusion
b) Establish vascular access
c) Does the patient need cranial imaging?

Step 2: Laboratory studies

a) Blood should be sent for complete cell count and culture
b) Consider blood for electrolytes, blood urea nitrogen, creatinine, and glucose
c) Cerebrospinal fluid should be obtained and sent for:
   - Gram stain
   - Bacterial culture
   - Cell count and differential
   - Glucose and protein
   - Consider sending CSF for viral studies, such as enteroviral and/or herpes simplex PCR
   - Consider sending CSF for fungal or mycobacterial studies
d) Consider sending Lyme serology based on local epidemiology

Step 3: Treat infection

a) Dexamethasone, if appropriate
b) Antimicrobials

Step 4: Subsequent management

a) Follow neurologic examination closely, especially cranial nerves
b) Daily weights and strict measurement of intake and output
c) Formal hearing evaluation
d) Consider long-term follow-up including neuropsychiatric testing

Initial Empiric Therapy of Suspected Bacterial Meningitis

Age	Common Bacterial Pathogens	Initial Empiric Therapy*
≤2 months	Group B streptococci, *E. coli* and other enterobacteriacae, *Strep. pneumoniae*, *L. monocytogenes*	Ampicillin plus cefotaxime† plus aminoglycoside
≥2 months	*N. meningitides*, *Strep. pneumoniae*, *H. influenzae* spp.	Dexamethasone‡ plus cefotaxime plus vancomycin

**Specific doses of antimicrobials vary by age and are generally higher than for other indications. Pathogens and empiric therapy will not necessarily be the same for premature infants, immunocompromised children and those post head trauma or surgery. Additional therapy will be guided by the result of CSF Gram stain and the result of blood and CSF culture.*

†Meropenem may be substituted for cefotaxime in case of allergy or the need for more broad-spectrum gram-negative coverage. If gram-positive cocci are identified, the addition of vancomycin should be considered until Strep. pneumoniae and Staph. aureus have been excluded.

‡Dexamethasone should be considered if S. pneumoniae or H. influenzae type B are the suspected pathogens.

Drug Dosing by Age for Selected Medications

Medication	0–7 Days of Age*	8–28 Days of Age	Infants and Children	Adult Max. Dose
Aminoglycosides				
gentamicin	2 mg/kg/dose q12h	2 mg/kg/dose q8h	2.5 mg/kg/dose q8h	—
tobramycin	2 mg/kg/dose q12h	2 mg/kg/dose q8h	2.5 mg/kg/dose q8h	—
amikacin	10 mg/kg/dose q12h	7 mg/kg/dose q8h	7 mg/kg/dose q8h	—
Ampicillin	50 mg/kg/dose q8h	50 mg/kg/dose q6h	75 mg/kg/dose q6h	12 g/d
Cefotaxime†	50 mg/kg/dose q8h	50 mg/kg/dose q6h	50 mg/kg/dose q6h	12 g/d
Meropenem	40 mg/kg/dose q8h	40 mg/kg/dose q8h	40 mg/kg/dose q8h	6 g/d
Vancomycin	15 mg/kg/dose q12h	15 mg/kg/dose q8h	15 mg/kg/dose q6h	—

**Assumes gestational age ≥36 weeks*

†Cefotaxime may be used at a dose of up to 300 mg/kg/d in pneumococcal infections

Treatment by Pathogen

Bacteria	Antibiotic(s) of Choice*
Group B streptococci	Ampicillin plus an aminoglycoside (during early therapy)
E. coli	Cefotaxime plus an aminoglycoside
L. monocytogenes	Ampicillin plus an aminoglycoside (during early therapy)
Strep. pneumoniae cefotaxime susceptible MIC ≤ 0.5 µg/mL	Cefotaxime
Strep. pneumoniae† penicillin nonsusceptible MIC ≥ 0.1 µg/mL and cefotaxime nonsusceptible MIC ≥ 1.0 µg/mL	Cefotaxime and vancomycin (also consider adding rifampin)
N. meningitidis Penicillin MIC ≤ 0.1 µg/mL	Penicillin G or ampicillin
N. meningitidis Penicillin MIC 0.1–1.0 µg/mL	Cefotaxime
H. influenzae	Cefotaxime

**Specific therapy will also be guided by clinical improvement and specific susceptibility testing performed on the bacteria recovered from the patient.*
†Consultation with an infectious diseases specialist is recommended.

Potential Complications of Meningitis

Short-term complications

Septic shock
SIADH (syndrome of inappropriate antidiuretic hormone secretion)
Seizures
Brain infarction
Cerebral edema
Intracranial abscess
Intracranial venous thrombosis (e.g., cavernous venous thrombosis)
Intracranial hemorrhage
Cranial nerve palsies
  Most notably hearing loss

Long-term complications

Seizures
Cranial nerve palsies (including hearing loss)
Focal cerebral deficits (e.g., hemiparesis)
Cognitive impairment

Viral Encephalitides	
Double-stranded DNA viruses	Adenovirus Cytomegalovirus Epstein–Barr virus Hepatitis B Herpes simplex virus 1 and 2 Human herpesvirus 6 and 7 Varicella-zoster
Single-stranded DNA virus	Parvovirus
Arboviruses (single-stranded RNA viruses)	California (La Crosse) virus Eastern equine virus St. Louis encephalitis West Nile virus Western equine virus Powassan Colorado tick fever Venezuelan equine
Enterovirus (single-stranded RNA viruses)	Poliovirus Coxsackie Echovirus
Other RNA viruses	Hepatitis A Influenza Parainfluenza Respiratory syncytial virus Rotavirus
Paramyxovirus	Hendra Measles Mumps Nipah
Transmitted via mammals	Rabies Equine morbillivirus (Hendra) Nipah Lymphocytic choriomeningitis Encephalomyocarditis Vesicular stomatitis

Nonviral Causes of Encephalitis

Bacterial	*Actinomyces* *Bartonella henselae* Brucellosis *Haemophilus influenzae* *Legionella* *Mycobacterium tuberculosis* *Mycoplasma pneumoniae* *Neisseria meningitidis* *Nocardia actinomyces* *Salmonella typhi* *Streptococcus pneumoniae*
Spirochetal infections:	*Treponema pallidum* *Leptospira* *Borrelia burgdorferi* *Tropheryma whippeli*
Rickettsial	Ehrlichiosis *Rickettsia rickettsii* *Rickettsia prowazeki* *Rickettsia typhi* *Coxiella burnetii* (*Q fever*)
Fungal	Aspergillosis *Candidiasis* *Coccidioides immitis* *Cryptococcus neoformans*
Parasitic	*Acanthamoeba* spp. *Balamuthia mandrillaris* Human African trypanosomiasis *Naegleria* spp. *Plasmodium* spp. Schistosomiasis *Strongyloides stercoralis* *Toxoplasma gondii* *Trypanosoma* spp. *Trichinella spiralis*
Postimmunization encephalitis	Smallpox vaccine Typhoid-paratyphoid vaccine Influenza vaccine Measles vaccine
Other	*Chlamydia psittaci* *Chlamydophila pneumoniae**

**Formerly Chlamydia pneumoniae.*

ADEM Versus Viral Encephalitis

	ADEM	Encephalitis
Age	Children ≥ Adults	Any
Recent vaccine	+++	−
Prodromal illness	+++	+
Fever	+/−	+++
Visual symptoms	+/−	−
Spinal cord/cerebellum involvement	+/−	+/−
CSF	Lymphocytic pleocytosis +/− Elevated protein Normal glucose Negative cultures + Elevated oligoclonal bands and myelin basic protein	Lymphocytic pleocytosis Elevated protein +/− Normal glucose +/− Negative cultures − Oligoclonal bands − Myelin basic protein
Serum	+/− Leucocytosis	+++ Leucocytosis
MRI	Multiple areas of white matter hyperintensity Often bilateral Often in deep brain structures (basal ganglia, brainstem, cerebellum, spinal cord) and optic nerves.	Focal areas (1 or 2) of white or gray matter Unilateral/bilateral Usually cortical

−, not present; +, present; +/−, Not consistent present; +++, consistently present.

Laboratory Diagnosis of Viral Encephalitides

Virus	PCR CSF	PCR Serum	Serology: CSF	Serology: Serum	Culture Pharynx	Culture: Rectum	Culture: Blood	Culture: CSF	Other
HSV 1 & 2	CS	−	+	−	−	−	−	−	Intranuclear inclusion bodies
VZV	CS	CS	+	+	−	−	−	+	Skin vesicle (PCR)
HHV6	++	++	+/−	+/−	−	−	+	+	
EBV/CMV	++	++	CS	CS	+/−	−	+/−	+/−	
Adenovirus	++	++	+/−	+/−	CS: RAA	+	−	−	
Arbovirus*	++	++	CS	CS	−	−	CF	CF	
Enterovirus	CS	CS	−	−	+	+	−	+	Urine PCR
Measles	−	−	+	+	+	−	+	−	CS: Rapid antigen assay
Rabies	−	−	CS	CS	−	−	−	+	Negri bodies
Mycoplasma pneumoniae	++	−	+	+	CS: PCR	−	+	+	
Influenza	−	−	−	+/−	CS: DFA/ PCR	−	+	+	

**Arboviruses include: St. Louis encephalitis (SLE), Western equine encephalitis (WEE), and West Nile virus (WNV)*
DFA: direct fluorescent antibody
RAA: rapid antigen assay
− Not clinically useful/not available
+/− Variable utility
+ Effective
++ Increasing clinical use
CS Clinical standard
CF Confirmatory

Key Features of the Viral Encephalitides

Virus	Key Clinical or Epidemiological Features
HSV	Common cause of encephalitis. Predilection for temporal lobes, sylvian fissure, orbital–frontal cortex. Associated with periodic lateralizing epileptiform disharges on EEG, vesicles on the skin, focal seizures, hemiparesis, aphasia, and cranial neuropathies.
HHV-6	Rarely causes encephalitis. Typically occurs in infants and small children, and has a focal onset.
VZV	Uncommon cause of encephalitis. Typically occurs in children. Usually associated with vesicular rash, headache, vomiting, altered mental status, and seizures. Can also cause ischemic or hemorrhagic infarcts.
EBV	Rarely causes encephalitis. Often associated with rash or mononucleosis.
CMV	Rarely causes encephalitis. More common in immunocompromised patients.
EV	Common cause of CNS infection, but rarely causes encephalitis. Often associated with pharyngitis, gastroenteritis, and rash.
Arboviruses	Most common causes of worldwide encephalitis.
WNV	Associated with headache, vomiting, diarrhea, abdominal pain, and rash. Presents with seizures, flaccid paralysis, and cranial neuropathies.
EEE	Rare cause of encephalitis, but children are most affected. Presents with sudden high fever, seizures, and altered mental status.
SLE	Rarely causes encephalitis. Presents with headache.
La Crosse	Rare cause of encephalitis, but occurs most commonly in children. Associated with upper respiratory illness, abdominal pain, and seizures.
Influenza	Rarely causes encephalitis in the United States. Presents with a prodrome of myalgias and fever, progresses to cause seizure.
Rabies	Rare in developed countries, but common throughout the world.
Encephalitic	Presents with anxiety, hydrophobia, aerophobia, hypersalivation, and seizures.
Paralytic	Presents with progressive peripheral nerve paralysis.
Measles	Rarely causes encephalitis, more commonly causes SSPE. SSPE occurs months to years after measles infection and presents with progressive dementia, myoclonus, seizures, and ataxia.
Mumps	Rarely causes encephalitis. Presents with fever, headache, and a typically mild course. Postinfectious encephalomyelitis: occurs 7–10 d after mumps infection and is more severe. Symptoms include seizure, hemiparesis, and altered mental status.

Antiviral Therapy

Antiviral Agent	Indication	Drug-Related Complications
Acyclovir	Herpes viruses	Nephrotoxic
Amantadine	Influenza A	Declining effectiveness, anticholinergic effects
Cidofovir	CMV retinitis Acyclovir resistant herpes	Nephrotoxic
Foscarnet	Herpes viruses: CMV (including CMV retinitis), herpes simplex viruses	Hypocalcemia Renal failure
Ganciclovir	CMV	Aplastic anemia, phlebitis, nephrotoxic, teratogenesis,
Oseltamivir*	Influenza A and B	Stevens–Johnson syndrome, hepatitis
Ribavarin	Influenza A and B, West Nile virus, Research ongoing in hepatitis B/C, polio measles, smallpox	Nephrotoxic, teratogenesis,

**Currently considered first-line therapy for influenza-related complications.*

1. Maps for independent work with literature for this topic

Main task Instruction Answers

Etiology What do you know about etiology of the neuroinfections and meningococcal infection

Clinical manifestation Describe the clinical picture of the neuroinfections and meningococcal infection

Diagnostic Clinical and laboratory methods of investigation in diagnostics of the neuroinfections and meningococcal infection

Differential diagnostic Make differential diagnosis of the neuroinfections and meningococcal infection

Treatment Prescribe an adequate therapy of the neuroinfections and meningococcal infection

2. Self-control for this topic

Control questions.

1. Comment the terms “meningococcal infection”, “meningococcemia” and “meningitis”. Ground the actuality of this problem concerning the children of the 1st year of life.
2. What is etiology of neuroinfections and meningococcal infection?
3. What do you know about epidemiology of neuroinfections and meningococcal infection?
4. What do you know about pathogenesis of neuroinfections and meningococcal infection?
5. Describe the clinical picture of meningococcemia in children.
6. Describe the clinical picture of the meningitis in children.
7. Describe the clinical picture of neuroinfections and meningococcal infection in children of the 1 st years of life.
8. What do you know about clinical and laboratory methods of investigation in diagnostics of neuroinfections and meningococcal infection?
9. What do you know about clinical and laboratory methods of investigation in diagnostics of the meningitis?
10. To make differential diagnosis of the meningococcemia and other infection diseases.
11. To make differential diagnosis of the meningitis and other infection diseases.
12. What do you know about complications and prognosis of neuroinfections and meningococcal infection?
13. Prescribe an adequate therapy of meningococcal infection to children.
14. Prescribe an adequate therapy of the meningitis to children.
15. What do you know about prophylaxis of neuroinfections and meningococcal infection?

16. Comment the terms of ITS, DIC-syndrome, hypertermic syndrome, convulsion syndrome in children with neuroinfectious. Ground the actuality of this problem concerning the children of the 1st year of life.

17. What do you know about of ITS, DIC-syndrome, hypertermic syndrome, convulsion syndrome in children with neuroinfectious?

18. Describe the clinical picture of ITS, DIC-syndrome, hypertermic syndrome, convulsion syndrome in children with neuroinfectious.

19. Describe the clinical picture i of ITS, DIC-syndrome, hypertermic syndrome, convulsion syndrome in children of the 1 st years of life with neuroinfectious.

20. What do you know about clinical and laboratory methods of investigation in diagnostics of ITS, DIC-syndrome, hypertermic syndrome, convulsion syndrome in children with neuroinfectious?

21. Prescribe an adequate therapy of ITS in children with neuroinfectious..

22. Prescribe an adequate therapy of DIC-syndrome in children with neuroinfectious.

23. Prescribe an adequate therapy of hypertermic syndrome in children with neuroinfectious.

24. Prescribe an adequate therapy of convulsion syndrome in children with neuroinfectious.

Tests of the 2-nd level

Question № 1

The girl of the 2 years old was ill acutely from increase of temperature up to 39OC and appearance on a skin hemorrhage elements of a rash, which fast was increased in sizes. Physical examination: the state is severe, skin is pale, marble, cold to the touch, hemorrhagic rush, arterial pressure is reduced, oligouria, tachycardia. A doctor has exhibited the diagnosis - meningococcemia, infective-toxic shock II degree.

What urgent help should a doctor conduct before the admittance of the patient at the in-patient department?

A. Introduction of euphyllin.

B. Introduction of large dosages of steroid hormones.

C. Introduction of penicillin.

D. Introduction of contrical.

E. Introduction of heparin.

Question № 2

The child of the two years was ill suddenly with fever, myalgias, weakness, and headache. In 7 hours the rash has appeared on legs and buttock.

A state of the child is heavy, multiple hemorrhage into skin, cyanosis, falling of the arterial pleasure , the pulse is rapid. The minigeal signs are not present.

What express method of diagnostics will meningococcal etiology of disease confirm?

A. Lumbar puncture.

B. Common analysis of blood.

C. Bacteriological test.

D. Hemoculture.

E. Method "of a thick drop ".

Question № 3

For treatment of the meningococcal meningitis we use the high daily dozes of penicillin. That is explained:

A. Low sensitivity of the meningococcal to penicillin.

B. Heavy current of illness

C. Bad penetration penicillin in spinal fluid

D. Preventive maintenance of the edema of a brain

E. Preventive maintenance of the ITS.

Question № 4

The child of the 3-rd years was ill acute with fever, vomiting. Objectively: Kernig’s and Brudzinsky’s signs are positive, clonic and tonic convulsion.

What manipulation is necessary for confirmation of the diagnosis?

A. Lumbar puncture.

B. Sternal puncture.

C. Pleural puncture.

D. Abdominal puncture.

E. Venal puncture.

Question № 5

At the child of the 2 years: the temperature 39oC, several headache, vomiting, positive meningeal signs; in spinal fluid –neutrophil's pleocytosis.

What is start's antibiotic therapy?

A. Cephtriaxon.

B. Penicilin.

C. Cephazolin.

D. Polymicsin.

E. Levomicitin

Question № 6

At the child with weight of 10 kg is diagnosed purulent meningitis. This child was administered of large doze of penicillin.

What scheme of antibiotic therapy is necessary?

A. Of 100000 units 4 times per day

B. Of 300000 units 5 times per day

C. Of 1000000 units 4 times per day

D. Of 500000 units 6 times per day

E. Of 100000 units 6 times per day

Question № 7

The child of the 5 years was ill in 3 days: temperature up to 38OC, cough, rhinitis, pharingitis, the meninengeal symptoms are negative. The second child from this family is at hospital with meningococcal infection, meningococcemia, purulent meningitis in 7 days.

What does pediatrician have to do in this situation?

A. Prescribe interferon.

B. Prescribe penicillin.

C. Prescribe erythromycin.

D. Bacteriological test on meningococc from rhinopharinx.

E. To admit of the patient to an infectious hospital.

Question № 8

The child of the 10 years with meningococcal meningitis has been received the antibiotic therapy in 7. The state was stabilized, symptoms of toxicosis, meningeal signs are absent. Is conducted control lumbar puncture.

What is result of research of the spinal fluid for cancel antibiotics?

A. Cytosis is lower than 150 cells, lymphocytes.

B. Cytosis is lower than 150 cells, neutrophilosis

C. Cytosis is lower than 100 cells, lymphocytes

D. Cytosis is lower than 100 cells, neutrophilosis

E. The cerebrospinal fluid is unchanged.

Question № 9

Meningism and meningitis can be accompanied of the toxicosis, headache, vomiting, meningeal symptoms.

For their differentiation it is necessary to conduct:

A. Bacteriological test of the spinal fluid.

B. General analysis of the spinal fluid.

C Bacterioscopic test of the spinal fluid.

D Virologist test of the spinal fluid.

E. All researches are equally necessary.

Question № 10

At the child of the 5 years, who has contact with the patient with a meningococcal infection was revealed: headache, painful swallowing, subfebrile temperature, hyperemia of the nasopharyngeal mucosa and hyperplasia of lymphoid nodes, rhinitis.

What method is it possible to confirm the diagnosis " Meningococcal nasopharingitis"?

A. Bacteriological test of slime from nasopharinx.

B. Bacteriological test of blood.

C. Bacteriological test of feces.

D. Serological test.

E. All listed methods.

Question № 11

The doctor of first aid has diagnosed at the child 10 months a meningococcal infection, meningococcemia. What antibiotic is necessary to introduce to the patient before admission to the hospital?

A. Penicillin

B. Gentamicine

C. Levomicetin-succinat

D. The introduction of antibiotics is contra-indicated

E. Cepasolin

Question № 12

At the child of the 5 months is diagnosed meningococcal infection, meningococcemia, ITS II degree.

What minimum start doze of steroid is necessary to conduct (on prednizolon)?

A. 3 mg/kg.

B. 5 mg/kg.

C. 10 mg/kg.

D. 20 mg/kg.

E. 30 mg/kg.

Tests of the 3-rd level

Question № 1

At the child of the 4 months the diseases is accompanied with high temperature, general restless, vomiting, convulsions, hyperesthesia of the skin, positive

meningeal symptoms. In lumbar puncture spinal fluid flows under increased pressure, turbit

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 2

At the child of the 8 months with the ARVI, for the 2-nd day of illness a state has worsened: hyperthermia, vomiting, clonic and tonic convulsions. Objectively: stiffness of the occupital muscles, the positive symptoms of Kernigan. In lumbar puncture spinal flows under increased pressure, but one is unchanged.

1. What complication of the ARVI was developed at the child?
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 3

The child of the 1 year was ill acutely with high fever, vomiting, hyperesthesia of the skin, hemorrhagic rash on the buttocks and lower extremities. He is lying on his side with head tossed back and legs flexed to the abdomen.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 4

The child of the 7 months was ill acutely with high fever, general toxemia, mental disturbances, stiffness of the occipital muscles and hemorrhagic rush with macular lesions.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 5

At the child with meningococcemia are revealed hemorrhagic on a skin, thrombocytopenia, increased speed of a coagulation of blood.

1. The main reason of these symptoms.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 6

At the boy of the 4 months with a purulent meningitis, the common state has worsened for 2 day - has lost consciousness, were developed clonic and tonic convulsions, the symptom of Grephe is positive, has appeared nistagm.

1. What syndrome has complicated of the current of the purulent meningitis?
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

ENTEROVIRAL INFECTION, ACUTE EPIDEMIC POLIOMYELITIS IN CHILDREN: CLINICAL FORMS, DIAGNOSIS, PROPHYLAXIS, TREATMENT. MEANING OF THE "FLACCID PARALYSIS"

Duration: – 3 hours.

Actualizes of this problem: the rate of the enteroviral infections is still high and of course is especially severe in children at the early age. The district doctor must not only know how to determine the disease timely, but also learn how to use the methods of therapy, master the complex of anti-epidemic methods in the district to prevent the spreading of infectious diseases, leading to an epidemic outbreak. However, following introduction of effective vaccines, polio incidence 6declined rapidly and global polio eradication may be achieved within the next decade.

Aim

To study the information about etiology, epidemiology, pathogenesis, pathophysiology, clinical manifestations, diagnosis, differential diagnosis, complications, prognosis, treatment, prevention of the acute epidemic poliomyelitis, enteroviral infections.

1. **Educational task**

Students must to know:

1. To study information about etiology, epidemiology, pathogenesis of acute epidemic poliomyelitis.
2. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of the acute epidemic poliomyelitis.
3. To teach students clinical peculiarities of the acute epidemic poliomyelitis in children of the 1 st year of life.
4. To discuss questions of complications, prognosis of the acute epidemic poliomyelitis in children.
5. To study information about modern diagnostics of the acute epidemic poliomyelitis in children.

6. To teach students to prescribe treatment of the acute epidemic poliomyelitis in children.
7. To discuss questions of prevention of the acute epidemic poliomyelitis in children.
8. To study information about etiology, epidemiology, pathogenesis of enteroviral infections.
9. To discuss questions of clinical manifestations, diagnosis, differential diagnosis of the enteroviral infections.
10. To teach students clinical peculiarities of the enteroviral infectionsin children of the 1 st year of life.
11. To discuss questions of complications, prognosis of the enteroviral infections in children.
12. To study information about modern diagnostics of the enteroviral infections in children.
13. To teach students to prescribe treatment of the enteroviral infections in children.
14. To discuss questions of prevention of the enteroviral infections in children.

Students must to make (skills):

1. To ask the parents or the child about the complaints.
2. To ask the patients about the family history, the past history, the history of the present illness.
3. To prescribe to patients of the laboratory and instrumental investigations.
4. To value of the patient’s result of the laboratory and instrumental investigations.
5. To make an initial diagnosis.
6. To make a differential diagnosis.

7. To make a complete diagnosis.

8. To apply a new method of treatment.

9. To elaborate of the prophylactic measures for prevention of children infection

2. Manual for the independent auditorium work

Starting level of knowledge:

Programme of microbiology, normal and pathologic physiology departments of Medical University.

Contents.

The determination of meaning of acute epidemic poliomyelitis, enteroviral infections. Etiology, epidemiology, pathogenesis, pathophysiology of acute epidemic poliomyelitis, enteroviral infections. Clinical manifestations of acute epidemic poliomyelitis, enteroviral infections. Clinical peculiarities of acute epidemic poliomyelitis, enteroviral infections in newborns and children of the 1 st year of life. Modern diagnostics of acute epidemic poliomyelitis, enteroviral infections in children. Diagnosis, differential diagnosis of acute epidemic poliomyelitis, enteroviral infections. Complications, prognosis of acute epidemic poliomyelitis, enteroviral infections in children. Etiotropic and pathogenetic treatment of acute epidemic poliomyelitis, enteroviral infections in children. Prevention of acute epidemic poliomyelitis, enteroviral infections in children.

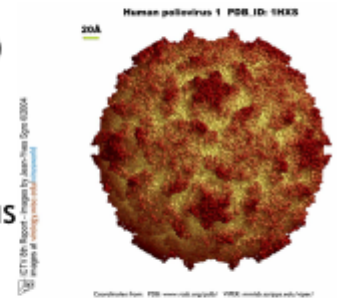
The Global Polio Eradication Initiative (GPEI)

- **1988 World Health Assembly Resolution**
- **Headed by national governments with five leading partners**
  - World Health Organization (WHO)
  - Rotary International
  - Centers for Disease Control and Prevention
  - United Nations Children's Fund (UNICEF)
  - Bill & Melinda Gates Foundation

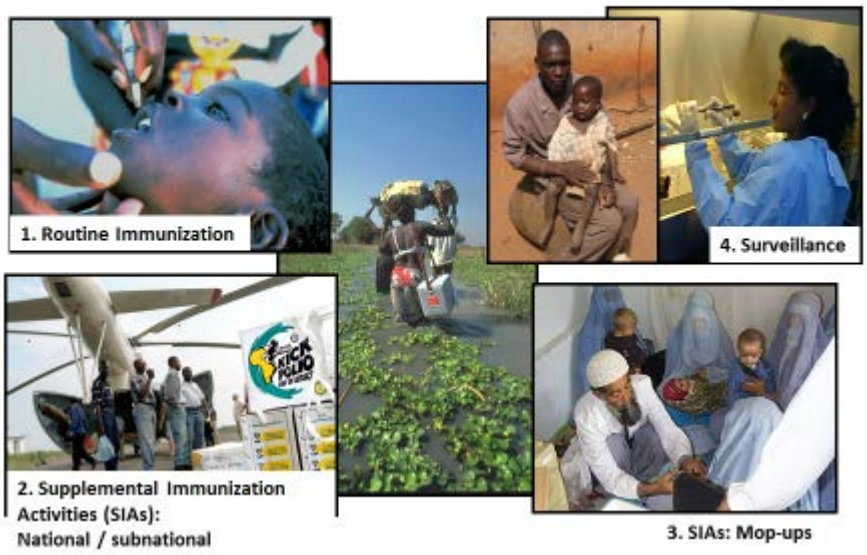
World Health Organization · Rotary · CDC · unicef · Bill & Melinda Gates foundation

Polio – The Viruses and the Disease

- Human infection by one of 3 poliovirus serotypes (RNA viruses - *Enterovirus* genus)
- Transmitted person-to-person, by fecal-oral route and respiratory route
- Highly infectious, ubiquitous infection in absence of immunization
- Paralysis is a rare outcome (<1%)

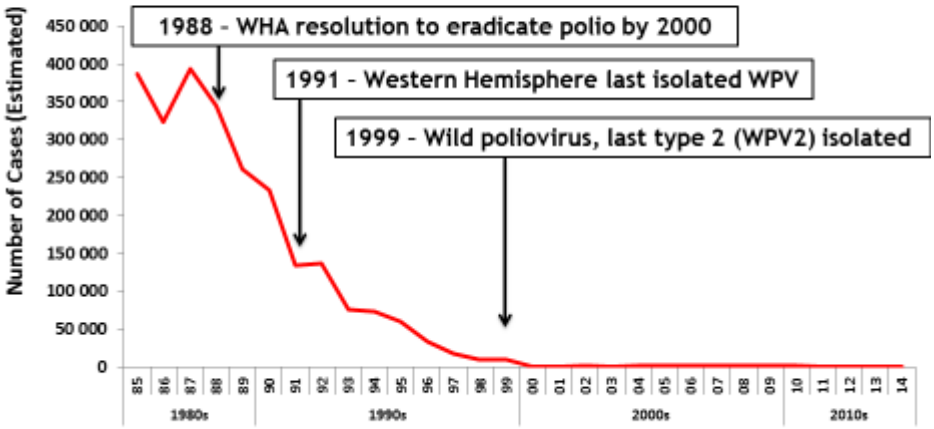


The Global Polio Eradication Initiative: *The 4 Key Strategies*

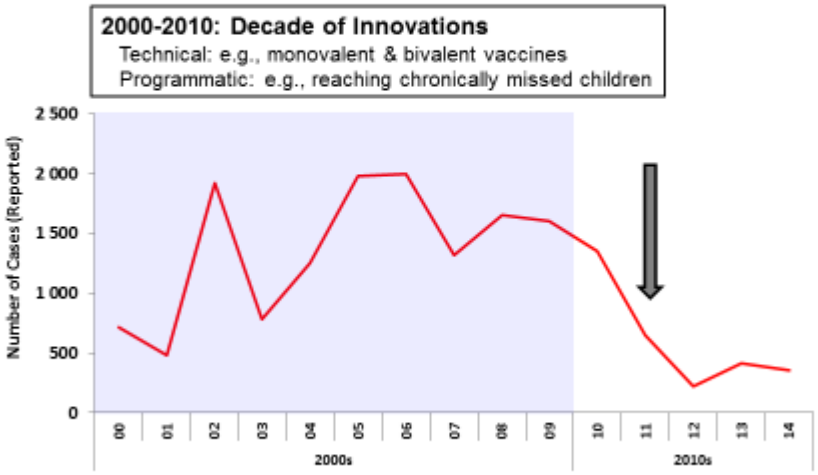


Wild Polio Cases, Worldwide, 1985-2014

By 2000, over 99% decrease in cases of polio

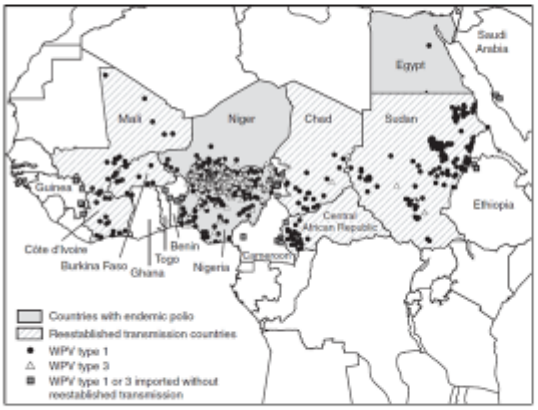


Wild Polio Cases, Worldwide, 2000–2014



Failure Is Not An Option

Global Re-emergence After Temporary Boycott of Polio Vaccination in Nigeria, 2003

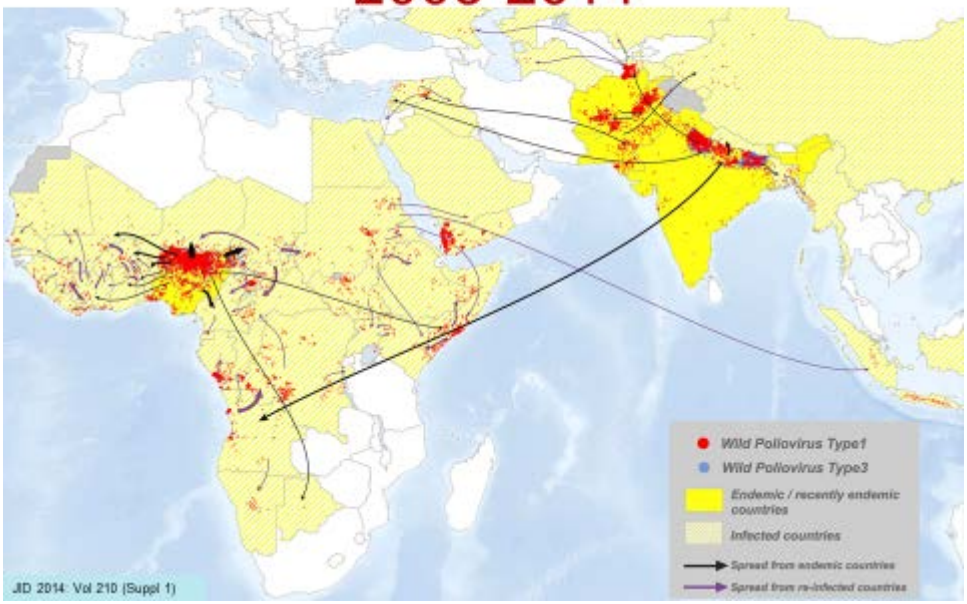


- By end of 2003, spread to 8 previously polio-free countries
- By end of 2004, 14 countries infected, with re-established transmission in 6
- By end of 2006, 20 countries infected

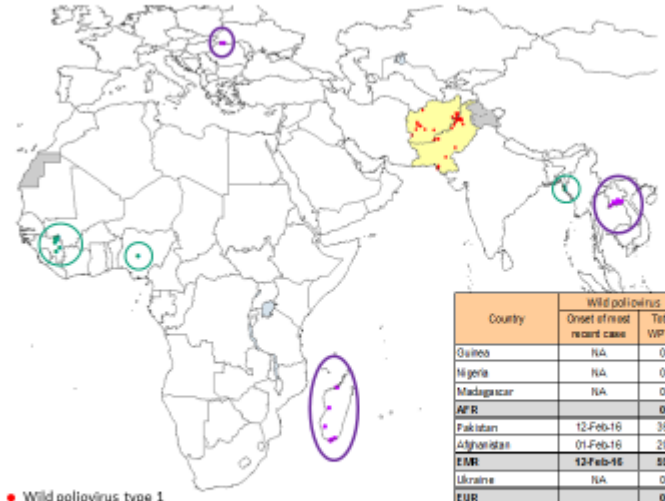
What Would be Consequences of Failure of Polio Eradication?

- Poliovirus would quickly spread, causing large, disruptive outbreaks
- These outbreaks would require substantial resources to contain
- Wild poliovirus would eventually find its way back to every country without an effective immunization system, causing ~200,000 cases per year

International Spread of Poliovirus 2003-2014



Wild Poliovirus & cVDPV Cases[1], Previous 12 Months[2]



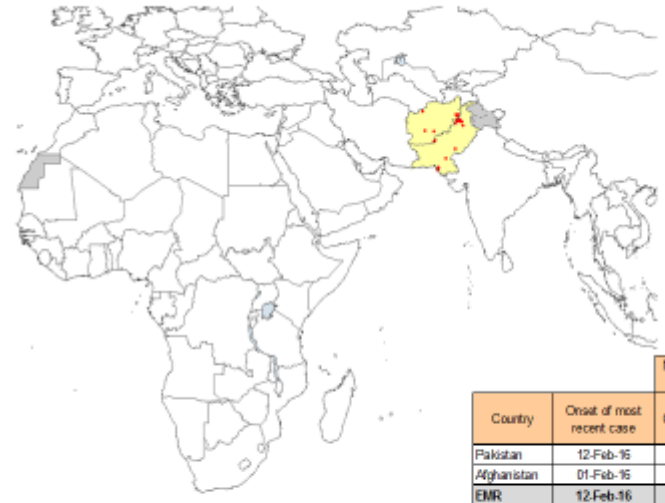
[1]Excludes viruses detected from environmental surveillance.
[2]Onset of paralysis 09 March 2015 – 08 March 2016

Country	Wild poliovirus		cVDPV	
	Onset of most recent case	Total WPV1	Onset of most recent case	Total cVDPV
Guinea	NA	0	14-Dec-15	7
Nigeria	NA	0	16-May-15	1
Madagascar	NA	0	22-Aug-15	10
AFR		**0**	**14-Dec-15**	**18**
Pakistan	12-Feb-16	39	NA	0
Afghanistan	01-Feb-16	28	NA	0
EMR	**12-Feb-16**	**59**		**0**
Ukraine	NA	0	07-Jul-15	2
EUR		**0**	**07-Jul-15**	**2**
Lao People's Democratic Republic	NA	0	11-Jan-16	11
WPR		**0**	**11-Jan-16**	**11**
Myanmar	NA	0	05-Oct-15	2
SEAR		**0**	**05-Oct-15**	**2**
Global	**12-Feb-16**	**59**	**11-Jan-16**	**33**

NA: most recent case had onset of paralysis prior to rolling 12 months.

Data in WHO HQ as of 08 March 2016

Wild Poliovirus Cases[1], Previous 6 Months[2]



[1]Excludes viruses detected from environmental surveillance.
[2]Onset of paralysis 09 September 2015 – 08 March 2016

Country	Onset of most recent case	Number of WPV1 cases		Number of infected districts	
		Current	Previous	Current	Previous
Pakistan	12-Feb-16	25	147	14	37
Afghanistan	01-Feb-16	8	19	8	13
EMR	**12-Feb-16**	**34**	**166**	**22**	**50**
Global	**12-Feb-16**	**34**	**166**	**22**	**50**

Current rolling 6 months - 09 Sep 2015 - 08 Mar 2016
Previous rolling 6 months - 09 Sep 2014 - 08 Mar 2015

Data in WHO HQ as of 08 March 2016

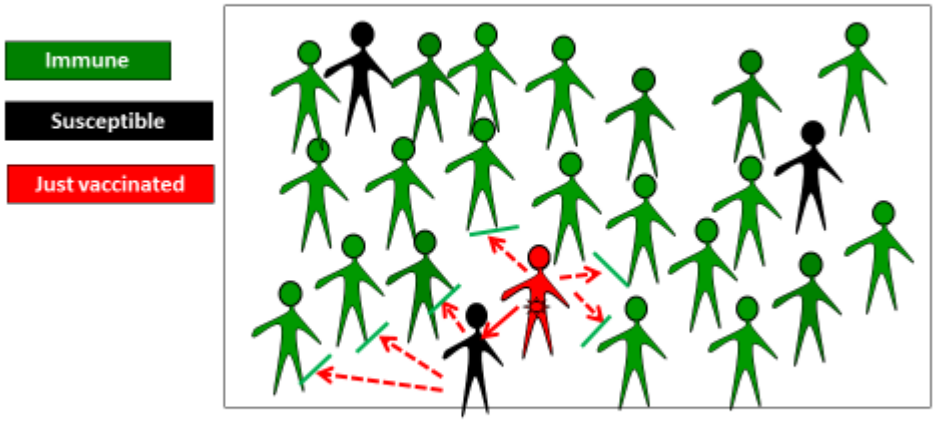
Poliovirus Strains

- Sabin strains contained in OPV are derived from wild poliovirus (WPV)
  - Attenuation: Mutations in genome induced by lab manipulation
- Attenuation results in:
  - Reduced ability to cause paralysis (neurovirulence)
  - Reduced capacity to pass from person to person (transmissibility)
  - Similar induction of antibodies (serum, pharynx, intestine)

Vaccine-Derived Poliovirus (VDPV)

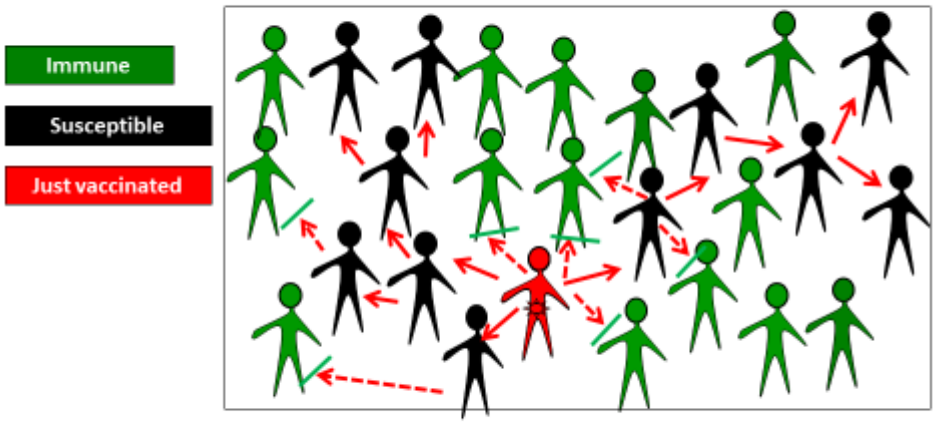
- Definition: Poliovirus with high divergence from Sabin virus
  - Divergence results from prolonged replication in one or multiple individuals
  - Identification only through genetic sequencing in the laboratory
- By consensus, virus are considered VDPVs if they have the following degrees of divergence from Sabin strains:
  - Types 1 and 3: $\geq$ 10 nucleotide changes from Sabin (>1% difference)
  - Type 2: $\geq$ 6 nucleotide changes from the Sabin strain
- Viruses with less divergence from Sabin strains may be called pre-VDPVs or vaccine-related poliovirus (VRPVs).
  - No need to worry about these in the field

Unlikely Emergence of Revertant Strains if High Population Immunity



Vaccine poliovirus (Sabin) transmitted to close contacts – if most of them are immune, transmission of Sabin virus stops within a few weeks.

Likely Emergence of Revertant Strains if Low Population Immunity



Vaccine poliovirus (Sabin) is transmitted to close susceptible contacts – replication continues as Sabin virus passes through new contacts – circulating vaccine-derived polioviruses emerge

Risk Factors for cVDPVs

1. Low population immunity
   - No wild poliovirus circulation for several years
   - Low routine immunization coverage, pockets of unimmunized individuals
2. Factors that facilitate poliovirus transmission
   - Crowding
   - Poor sanitation

Poliomyelitis Pathogenesis

- Entry into mouth
- Replication in pharynx, GI tract, local lymphatics
- Hematologic spread to lymphatics and central nervous system
- Viral spread along nerve fibers
- Destruction of motor neurons

Poliovirus Epidemiology

• Reservoir	Human
• Transmission	Fecal-oral Oral-oral possible
• Communicability	7 to 10 days before onset Virus present in stool 3 to 6 weeks

Poliovirus

- Enterovirus (RNA)
- Three serotypes: 1, 2, 3
- Minimal heterotypic immunity between serotypes
- Rapidly inactivated by heat, formaldehyde, chlorine, ultraviolet light

Poliovirus Vaccine

- 1955 Inactivated vaccine
- 1961 Types 1 and 2 monovalent OPV
- 1962 Type 3 monovalent OPV
- 1963 Trivalent OPV
- 1987 Enhanced-potency IPV (IPV)

Inactivated Polio Vaccine

- Highly effective in producing immunity to poliovirus
- 90% or more immune after 2 doses
- At least 99% immune after 3 doses
- Duration of immunity not known with certainty

Oral Polio Vaccine

- Highly effective in producing immunity to poliovirus
- Approximately 50% immune after 1 dose
- More than 95% immune after 3 doses
- Immunity probably lifelong

Polio Vaccination Schedule

Age	Vaccine	Minimum Interval
2 months	IPV	---
4 months	IPV	4 weeks
6-18 months	IPV	4 weeks
4-6 years*	IPV	4 weeks

*the fourth dose of IPV may be given as early as 18 weeks of age

Polio Vaccine Adverse Reactions

- Rare local reactions (IPV)
- No serious reactions to IPV have been documented
- Paralytic poliomyelitis (OPV)

Vaccine-Associated Paralytic Polio

- Increased risk in persons 18 years and older
- Increased risk in persons with immunodeficiency
- No procedure available for identifying persons at risk of paralytic disease
- 5-10 cases per year with exclusive use of OPV
- Most cases in healthy children and their household contacts

ENTEROVIRAL INFECTIONS

Enteroviral infections are diseases, caused by enteroviruses Coxsackie A and B, ECHO viruses of *Picornaviridae* family. They are characterized by various clinical manifestations which are connected with toxemia, fever lesions of nervous system and muscles.

Etiology

Enteroviruses are group of intestinal viruses, which contain RNA. Coxsackie viruses morphologically resemble poliomyelitis virus and are divided into two groups due to their pathogenic influence: A (24 serotypes) and B (6 serotypes). ECHO viruses resemble Coxsackie viruses morphologically. There are 34 serotypes of EC HO viruses.

The viruses are considerably resistant to the influence of the environ mental factors. In feces and sewage they retain their vitality for some weeks. They survive at low temperatures retaining their vitality for several years. They perish when boiled under the influence of ultraviolet rays and disinfectants, which contain chlorine. In humans, who are the only hosts of this type vims, it may be present in feces (up to 3 months) rhinopharyngeal mucus, blood, cerebrospinal fluid. In the environment those viruses may be found in flies, some animals and sewage. ECHO viruses have been discovered by D. Enders in 1951 in healthy human carriers (in feces). ECHO is an abbreviation of Enteric Cytopathogenic Human Orphans. ECHO viruses differ from the polyoviruses by the fact that they do not lead to the experimental infection in monkeys and from the Coxsackie viruses by the absence of pathogenicity for the newborn mice.

Epidemiology

The source of infection is a sick human or a virus carrier. The main route of transmission is fecal-oral and air-droplet (in the first days of the disease especially). There is a possibility of transplacental virus infection. Infants up to 3 months old do not have the disease due to transplacental immunity and colostrum. The children from 3 to 10 years of age arc ill most frequently. The outbreaks of the disease are

observed in summer and autumn, sporadic cases are registered during the whole year. There is a possibility of regular increase in morbidity every 3-4 years. Enteroviral infections are highly contagions and in nursery schools an enteroviral outbreak can affect up to 80 % of children.

Encephalomyocarditis is a typical form in babies while enteroviral diarrhea is typical for 1-year-olds. The children from 1 to 3 years of age suffer from paralytic poliomyelitis-like disease, older children suffer from serous meningitis.

Pathogenesis

The portal of entry for Coxsackie and ECHO viruses is nasopharynx (air-droplet route) and intestinal mucous membrane (fecal-oral route). Transplacental transmission of infection may be encountered and various developmental defects may result in neonates. Viruses penetrate into the blood stream from the lymphatic system and virusemia results. Very of ten naso-pharynx is affected. The viruses have tropism to muscles (epidemic myalgia), heart (myocarditis), intestinal mucous membrane (gastroenteri-tis), nervous system (meningitis), lymphatic system (mesadenitis). Lesions of several systems may be present simultaneously (combined forms).

Clinical manifestations of enteroviral diarrhea (intestinal form).

The babies of some months to 4 years of age are ill most frequently. The disease is linked with reproducing of enteroviruses in the cells of intestinal mucus membrane. The disease has an acute onset with fever up to 38-39 °C, vomit-jjjjg. abdominal pain and diarrhea that lasts 6 to 9 days. Stools are watery, green, may contain insignificant quantity of mucus without blood or fecal leukocytes. Sometimes, abdominal distention occurs. Tenesmus is absent. Gastrointestinal disorders are combined with catarrhal signs from the first days of the disease (coryza, hyperemia of mucous membranes, dry cough). The disease course is non-malignant, its duration is up to 2 weeks.

Differential diagnosis with bacterial intestinal infection is based on the next signs: considerable toxemia is absent, diarrhea appears against a background of catarrhal signs. Epidemiological history may be useful. Enteroviral diarrhea

frequently combines with other clinical illness (serous meningitis, epidemic myalgia, herpangina, enteroviral exanthemas, acute myocarditis, respiratory illness).

Diagnosis and differential diagnosis

Clinical diagnosis of enteroviral infections is difficult. Only in those cases when specific complexes of symptoms are present (such as herpangina, epidemic myalgia, encephalomyocarditis, serous meningitis) one can suspect the enteroviral nature of the disease. Viral examinations are made in the first days of the disease. Feces, cerebrospinal liquid, nasopharyngeal mucus may contain the virus. For diagnosis it is not enough to isolate the virus, especially from feces because carriage of viruses is a frequent case in healthy humans. Serologic tests should also be made. Increasing of the antibody titer 4 times or over confirms the diagnosis in combination with clinical epidemic logical data.

Enteroviral infection should be differentiated from influenza and ARVI, serous meningitis of other etiology, acute intestinal infection of bacterial etiology. One must also be sure to differentiate enteroviral infection from acute appendicitis, cholecystitis, pancreatitis, rubella, allergic rash, yer-siniosis.

In adenoviral infection diarrhea usually occurs in 1-year-old babies. the disease has an acute onset with fever and catarrhal symptoms. Stools occur 4-8 times daily, are watery, contain insignificant amount of mucus The colitic syndrome is absent, mesadenitis symptoms may occur. THE disease lasts from 5 to 12 days. Adenoviral diarrhea is characterized *by a* gradual progress, pronounced catarrh of the airways is not infrequen.

Treatment

Most patients are treated at home. Only severe cases are admitted to hospitals as in patients (serous meningitis, meningoencephalitis, encephalomyocarditis in neonates, myocarditis, uveitis). The patients keep bed in the acute period of the disease and are prescribed symptomatic and pathogenetic medications. In headache analgin, amidopyrin is prescribed, in hyperthermia the patient is given antipyretics.

In case of serous menengitis or meningoencephalitis dehydration is performed by i. v. introduction of a 20 % glucose solution, 10 % calcium gluconatc solution, i. m. introduction of 25 % magnesium sulfate (0.2 ml per kg of body weight for an infant younger than 12 months and I ml per kg of body weight if older than 12 months). Diuretics (lasix, mannitol) are indicated. In some cases lumbar puncture is indicated. Ribonuclease i. m. (0.5 mg per kg of body weight) is indicated in enteroviral meningitis with a good result. It is given every 4 1/2 hrs for 10-14 days.

Antibiotics are administered in case of a secondary bacterial infection leading to pneumonia, otitis, etc.

Prevention

Early diagnosis has special significance for treatment as well as isolating the patients from healthy persons for a period of 10 days till the symptoms subside.

1. Maps for independent work with literature for this topic

Main task	**Instruction**	**Answers**
Etiology	**What do you know about etiology**	
Clinical manifestation	**Describe the clinical picture of the Enteroviral infections and Poliomyelitis**	
Diagnostic	**Clinical and laboratory methods of investigation in diagnostics of the Enteroviral infections and Poliomyelitis**	

Differential diagnostic	**Make differential diagnosis**	
Treatment	**Prescribe an adequate therapy of the Enteroviral infections and Poliomyelitis**	

2. Self-control for this topic

Control questions.

1. Comment the terms “Acute epidemic poliomyelitis”, “Acute peripheral paralysis”. Ground the actuality of this problem concerning the children of the 1st year of life.
2. What is etiology of Acute epidemic poliomyelitis?
3. What do you know about epidemiology of Acute epidemic poliomyelitis?
4. What do you know about pathogenesis of Acute epidemic poliomyelitis?
5. Describe the clinical picture of Acute epidemic poliomyelitis in children.
6. Describe the clinical picture of Acute epidemic poliomyelitis in children of the 1 st years of life.
7. What do you know about clinical and laboratory methods of investigation in diagnostics of Acute epidemic poliomyelitis?
8. Make differential diagnosis of Acute epidemic poliomyelitis and other infection diseases with peripheral paralysis.
9. What do you know about complications and prognosis of Acute epidemic poliomyelitis?
10. Prescribe an adequate therapy of the Acute epidemic poliomyelitis to children.
11. What do you know about prophylaxis of Acute epidemic poliomyelitis?
12. Comment the terms “Enteroviral infections”. Ground the actuality of this problem concerning the children of the 1st year of life.
13. What is etiology of Enteroviral infections ?

14. What do you know about epidemiology of Enteroviral infections ?
15. What do you know about pathogenesis of Enteroviral infections ?
16. Describe the clinical picture of Enteroviral infections in children.
17. Describe the clinical picture of Enteroviral infections in children of the 1 st years of life.
18. What do you know about clinical and laboratory methods of investigation in diagnostics of Enteroviral infections ?
19. Make differential diagnosis of Enteroviral infections and other infection diseases.
20. What do you know about complications and prognosis of Enteroviral infections?
21. Prescribe an adequate therapy of the Enteroviral infections to children.
22. What do you know about prophylaxis of Enteroviral infections ?

Tests of the 2-nd level

Question № 1

At the child of the 3 years with the acute peripheral paralysis (hypotonia, muscular weakness, loss of reflex) of the lower limb is suspected the diagnosis of the poliomyelitis.

What investigation is it necessary to nominate for confirmation of the diagnosis?

A. Survey of a neurology.

B. Common analysis of blood.

C. Electromiographia.

D. Feces and nasopharyngeal washings for poliovirus.

E. Echoencephalographia.

Question № 2

The child of the 1,5 years sick in the 5 day with fever up to 38-39oC, vomiting, abdominal pain, diarrhea up to 7-8 times per day, catarrhal signs, herpangina. Bacteriological tests for acute intestinal infections are negative.

What disease is possible?

A. Enteroviral infection.

B. Adenoviral infection.

C. Rotaviral infection.

D. Staphylococcal infection.

E. Dysbacteriosis.

Question № 3

The child of the 5 years was ill acutely: temperature 39-40oC, vomiting, headache, pain in a throat, abdominal pain. Objectively: the pharynx is hyperemic, vesicular on the soft palate, uvula, tonsils, pharyngeal wall, and occasionally the posterior buccal surfaces is surrounded by an erythematous ring that varies in size up to 10 mm in diameter. The major site of the lesions is the anterior tonsillar pillars. Stools are watery without blood or fecal leukocytes 3-4 times per day. Positive meningeal signs. In spinal fluid – 200 lymphocitis in 1 mkl. Bacteriolodical tests of the feces are negative.

What diagnosis is most probable?

A. Adenoviral infection.

B. Herpes simplex.

C. Varicella.

D. Rotaviral infection.

E. Enteroviral infection.

Question № 4

Acute beginning of disease, elevation temperature up 39-40oC, weakness, headache, muscular pain, catarrh of the respiratory tract, maculopapular rash has enabled to suspect at the child enteroviral infection.

What results of additional methods of an investigation will confirm the diagnosis?

A. Increasing of the specific antibodies 4 times.

B. High titer of the specific antibodies.

C. Selection of the virus from blood.

D. Definition of the IgG in blood of the patient.

E. Selection of the virus from feces.

Question № 5

The child of the 8 years was ill sadenly: temperature 39-40oC, vomiting, headache, pain in a throat, myalgia.

What group of viruses is the virus of epidemic myalgia of?

A. Herpes-viruses

B. Paramixoviruses

C. Retroviruses

D. Reoviruses

E. Enteroviruses

Question № 6

The patient 2 year with clinical picture of peripheral paralysis was admitted to the infection department. The Acute Epidemic Poliomyelitis is necessary to differentiate from following diseases:

A. Peter’s diseases

B. Gien-Barre’s syndrom

C. Myelitis

D. Paralysis of the facial nerve

E. All answers are correct

Question № 7

The patients 11 years with enteroviral infection was admitted at hospital. What from laboratory methods are not applied for diagnostics of the enteroviral infections:

A. Selection of a virus from nasopharynx

B. Selection of a virus from feces

C. Selection of a virus from spinal fluid

D. Serologic

E. Bacteriological

Question № 8

The patient 8 month with an acute languid paralysis should be directed:

A. In neurogical department

B. In infectious department

C. In therapy department

D. Can be kept at home

E. All answers are correct

Question № 9

The child of the 4-th years suddenly has ceased to stand on the right foot. Objectively: temperature is normal, hypotonia, muscular weakness, loss of reflexes, but the sensitivity is saved.

What is previously diagnosis?

A. Acute languid paralysis.

B. Myasthenia.

C. Enteroviral infection.

D. Acute poliomyelitis.

E. Syndrome by Gienna-Barre.

Question № 10

The 1,4 year child is staying at the infection department during 5 days. For paralytic form of the Acute Epidemic Poliomyelitis is characteristic all, except for:

A. Loss of reflexer

B. Hypotonia

C. Muscular weakness

D. Asymmetrical of paralysis

E. Violation of sensitivity

Tests of the 3-rd level

Question № 1

The child of the 1,5 years sick in the 5 day with fever up to 38-39ºC, vomiting, abdominal pain, diarrhea up to 7-8 times per day, catarrhal signs, herpangina. Bacteriological tests for acute intestinal infections are negative.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 2

The child of the 5 years was ill acutely: temperature 39-40ºC, vomiting, headache, pain in a throat, abdominal pain. Objectively: the pharynx is hyperemic, vesicular on the soft palate, uvula, tonsils, pharyngeal wall, and occasionally the posterior buccal surfaces is surrounded by an erythematous ring that varies in size up to 10 mm in diameter. The major site of the lesions is the anterior tonsillar pillars. Stools are watery without blood or fecal leukocytes 3-4 times per day. Positive meningeal signs. In spinal fluid – 200 lymphocitis in 1 mkl. Bacteriolodical tests of the feces are negative.

1. The most probably diagnosis.
2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

Question № 3

The child of the 6 years is sick within four days. The disease begins acutely, with intoxication, vomiting, weakness, then has been appeared dark urine and discolored feces, icteric mucous membrane and scleras. Epidemiology anamnesis: in group of a children's garden there are cases of viral hepatitis.

1. The most probably diagnosis.

2. To prescribe of the plan of the investigations to this patient.
3. To prescribe of the treatment to this patient

REFERENCES

BASIC REFERENCES

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8. World Health Organization. The Treatment of diarrhoea : a manual for physicians and other senior health workers. - 4th rev. 2008. 44 p.

THE FOLLOWING ORGANIZATIONS ALSO PROVIDE RELIABLE HEALTH INFORMATION.

BASIC INFORMATION

1. National Library of Medicine (www.nlm.nih.gov/medlineplus/healthtopics.html)
2. The American Academy of Pediatrics (www.aap.org)
3. The Centers for Disease Control and Prevention (www.cdc.gov/)
4. World Health Organization (WHO) (www.who.int/)