

العلم

Respiratory system Test bank

- Subject: Microbiology
- By: Chat-GPT



Lecture 1

Question 1:

A 7-year-old child presents with a sore throat, rhinorrhea, nasal congestion, and sneezing for the past three days. The mother insists on antibiotics to prevent worsening. On examination, the child has low-grade fever (37.8°C) and mild pharyngeal erythema. Which of the following is the most appropriate initial step in management?

- A. Start amoxicillin
- B. Prescribe a decongestant
- C. Reassure the parent and provide supportive care
- D. Order throat swab for bacterial culture

Answer: C. Reassure the parent and provide supportive care

Explanation: The symptoms described align with a common cold caused by viral infections such as rhinovirus. Antibiotics are not effective against viral infections and may contribute to antibiotic resistance. Supportive care, including hydration and rest, is sufficient in most cases.

Question 2:

A 34-year-old male presents with a 2-day history of nasal congestion, sneezing, low-grade fever, and malaise. He reports no productive cough or difficulty breathing. Which of the following viruses is most likely responsible for his symptoms?

- A. Influenza virus
- B. Rhinovirus
- C. Epstein-Barr virus
- D. Cytomegalovirus

Answer: B. Rhinovirus

Explanation: Rhinovirus is the leading cause of the common cold, responsible for 30–50% of cases. Its replication at cooler temperatures of the nasal mucosa makes it a frequent pathogen during seasonal transitions.

Question 3:

A patient with a known history of chronic obstructive pulmonary disease (COPD) presents with a worsening cough, wheezing, and shortness of breath after experiencing a common cold for a week. Which of the following complications should be most suspected in this patient?

- A. Acute bacterial sinusitis
- B. Acute otitis media
- C. Exacerbation of chronic bronchitis
- D. Viral pneumonia

Answer: C. Exacerbation of chronic bronchitis

Explanation: Viral infections like the common cold can exacerbate chronic bronchitis, especially in patients with underlying COPD. Symptoms such as worsening cough and breathlessness are key indicators.

A 5-year-old boy presents with fever, nasal congestion, and sore throat for three days. Examination reveals erythematous oropharynx without exudates. The child has a low-grade fever of 38°C and no difficulty swallowing. Which of the following findings would support a viral etiology for his illness?

- A. Presence of palatine tonsillar exudates
- B. Generalized lymphadenopathy
- C. Rhinorrhea and sneezing
- D. Elevated leukocyte count

Answer: C. Rhinorrhea and sneezing

Explanation: Viral upper respiratory infections, such as the common cold, often present with sneezing and nasal congestion. Tonsillar exudates and high fever typically suggest bacterial infections like streptococcal pharyngitis.

Question 5:

A 60-year-old immunocompromised patient develops a respiratory tract infection. Cultures reveal rhinovirus as the causative agent. Which of the following is the most likely complication in this patient?

- A. Acute bacterial sinusitis
- B. Bronchiolitis
- C. Viral pneumonia
- D. Septicemia

Answer: C. Viral pneumonia

Explanation: Immunocompromised patients are at higher risk of severe complications from viral infections, including lower respiratory tract involvement such as viral pneumonia.

Question 6:

A 4-year-old child presents with nasal obstruction, sneezing, and mild fever. His parents mention he has had similar symptoms before during winter. What is the most likely explanation for the recurrence of these symptoms?

- A. Lack of childhood vaccinations
- B. Rhinovirus's numerous serotypes
- C. Antibiotic resistance
- D. Poor immune system development

Answer: B. Rhinovirus's numerous serotypes

Explanation: With over 100 serotypes, rhinovirus causes recurrent infections as immunity to one serotype does not protect against others.

Question 7:

A 29-year-old male with no significant medical history reports two days of sore throat, nasal congestion, and fatigue. He asks about specific treatments for his condition. What should be recommended?

- A. Antibiotics and antihistamines
- B. Antiviral medications
- C. Symptomatic treatment only
- D. Corticosteroids

Answer: C. Symptomatic treatment only

Explanation: The common cold is a self-limiting viral illness. Treatment focuses on alleviating symptoms through rest, hydration, and over-the-counter medications such as decongestants.

Question 8:

A 12-year-old girl presents with nasal discharge, fever, and headache. After a week, her symptoms worsen with facial pain and tenderness over the maxillary sinuses. Which of the following is the most likely diagnosis?

- A. Viral upper respiratory tract infection
- B. Acute bacterial sinusitis

- C. Allergic rhinitis
- D. Influenza

Answer: B. Acute bacterial sinusitis

Explanation: Progression of symptoms like facial pain and tenderness indicates bacterial superinfection, commonly following viral upper respiratory tract infections.

Question 9:

A mother brings her 8-year-old son to the clinic with complaints of nasal congestion, sneezing, and a low-grade fever for two days. She is concerned about influenza. What clinical feature would help differentiate between the common cold and influenza?

- A. Nasal congestion
- B. High-grade fever
- C. Sneezing
- D. Rhinorrhea

Answer: B. High-grade fever

Explanation: Influenza typically presents with a sudden onset of high-grade fever and systemic symptoms like myalgia, unlike the mild symptoms of a common cold.

Question 10:

A 40-year-old man presents with a dry cough, nasal congestion, and malaise after exposure to a coworker with a respiratory infection. He asks if drinking cold water increases his risk of infection. What should the physician explain?

- A. Cold water directly causes respiratory infections.
- B. Cold water leads to dehydration, which may impair mucosal defenses.
- C. Cold water inactivates mucosal immunity.
- D. Drinking cold water strengthens the respiratory epithelium.

Answer: B. Cold water leads to dehydration, which may impair mucosal defenses.

Explanation: Dehydration from insufficient water intake may weaken mucosal barriers, increasing susceptibility to infections.

Question 11:

A 25-year-old woman presents with nasal congestion, sneezing, and a low-grade fever during the winter season. She asks why these symptoms are more common in colder months. Which of the following is the best explanation?

- A. Increased exposure to sunlight in winter
- B. Enhanced immunity during cold weather
- C. Viruses thrive in cold, dry conditions
- D. Poor nutrition during winter months

Answer: C. Viruses thrive in cold, dry conditions

Explanation: Many respiratory viruses, including rhinovirus and influenza, replicate more effectively in cold, dry environments. Reduced humidity also helps viruses survive longer outside the body.

Question 12:

A 2-year-old boy develops fever, nasal congestion, and a barking cough. He is diagnosed with croup caused by parainfluenza virus. Which part of the respiratory system is primarily affected in this condition?

- A. Nasal cavity
- B. Pharynx
- C. Larynx and trachea
- D. Bronchioles

Answer: C. Larynx and trachea

Explanation: Croup, or laryngotracheobronchitis, involves inflammation of the larynx and trachea, leading to the characteristic barking cough.

Question 13:

A 40-year-old man asks why antibiotics are not recommended for his nasal congestion and sore throat. Which of the following is the best explanation?

- A. Antibiotics are ineffective against viral infections.
- B. Viral infections rarely occur in adults.
- C. Antibiotics can eliminate the normal flora, worsening symptoms.
- D. Most viral infections cause life-threatening complications.

Answer: A. Antibiotics are ineffective against viral infections.

Explanation: Antibiotics target bacterial infections and have no effect on viruses, which are the most common cause of respiratory infections like the common cold.

Question 14:

A 3-year-old girl is brought to the clinic with fever, nasal congestion, and ear pain. Examination reveals a bulging tympanic membrane. What is the most likely diagnosis?

- A. Acute otitis media
- B. Sinusitis
- C. Viral pharyngitis
- D. Influenza

Answer: A. Acute otitis media

Explanation: Acute otitis media is a common complication of upper respiratory tract infections, especially in children, due to the spread of infection through the eustachian tube.

Question 15:

A 32-year-old man complains of nasal congestion and rhinorrhea. He asks if he can prevent future episodes. What is the most effective preventive strategy?

- A. Taking daily antihistamines
- B. Practicing hand hygiene
- C. Getting annual influenza vaccination
- D. Avoiding outdoor activities in winter

Answer: B. Practicing hand hygiene

Explanation: Hand hygiene is the most effective method to prevent the spread of common cold viruses, which are primarily transmitted via contact with contaminated surfaces or respiratory droplets.

Lecture 2

Case 1

Clinical Case:

A 5-year-old child presents with fever, runny nose, and a barking cough for the past two days. On examination, the child has inspiratory stridor and mild tachypnea. A chest X-ray reveals a steeple sign.

What is the most likely diagnosis, and what is the best initial treatment?

- A) Bacterial tracheitis; Antibiotics
- B) Croup; Dexamethasone
- C) RSV bronchiolitis; Supportive care
- D) Influenza; Antivirals

Correct Answer: B) Croup; Dexamethasone

Explanation:

Croup is a viral infection, commonly caused by the parainfluenza virus, characterized by a barking cough and inspiratory stridor. The steeple sign on X-ray confirms the diagnosis. Dexamethasone reduces airway inflammation and improves symptoms.

Case 2

Clinical Case:

A 28-year-old male returns from a trip to the Middle East, presenting with fever, cough, shortness of breath, and gastrointestinal symptoms including diarrhea. Chest X-ray shows bilateral pneumonia, and lab tests indicate elevated creatinine.

What is the most likely diagnosis, and what characteristic feature supports this?

- A) SARS-CoV; Gastrointestinal symptoms are rare
- B) MERS-CoV; Often involves kidney failure
- C) COVID-19; Loss of taste and smell is common
- D) Influenza; Neuraminidase inhibitors are the treatment of choice

Correct Answer: B) MERS-CoV; Often involves kidney failure

Explanation:

MERS-CoV commonly presents with respiratory symptoms and complications like pneumonia and acute kidney injury. Its association with travel to the Middle East and contact with camels is a key diagnostic clue.

Case 3

Clinical Case:

A 3-month-old infant is brought to the emergency department with a 2-day history of cough, fever, and difficulty feeding. The baby is tachypneic, has nasal flaring, and displays cyanosis around the lips. Wheezing and crackles are heard on auscultation.

What is the most likely causative agent?

- A) Influenza virus
- B) RSV
- C) Adenovirus
- D) Parainfluenza virus

Correct Answer: B) RSV

Explanation:

RSV is the leading cause of bronchiolitis in infants. Clinical features include wheezing, crackles, and respiratory distress. RSV infections are common in children under one year.

Case 4

Clinical Case:

A 67-year-old woman with a history of COPD presents with fever, chills, and body aches. She reports a sudden onset of myalgias and arthralgias. A nasopharyngeal swab confirms influenza infection.

What is the most appropriate treatment in this case?

- A) Oseltamivir within 48 hours of symptom onset
- B) Supportive care only
- C) Amoxicillin to prevent secondary bacterial infection
- D) Corticosteroids to reduce inflammation

Correct Answer: A) Oseltamivir within 48 hours of symptom onset

Explanation:

Oseltamivir is effective when started within 48 hours of symptom onset. Early treatment is crucial, especially for high-risk groups like individuals with COPD.

Case 5

Clinical Case:

A 9-year-old child is admitted with fever, vomiting, confusion, and a history of recent influenza treated with aspirin. On examination, the child is disoriented and lethargic.

What is the most likely complication?

- A) Meningitis
- B) Reye's syndrome
- C) Encephalitis
- D) Guillain-Barré syndrome

Correct Answer: B) Reye's syndrome

Explanation:

Reye's syndrome is a rare but severe complication of viral illnesses like influenza, especially when aspirin is used in children. It involves liver and brain damage.

Case 6

Clinical Case:

A 45-year-old male presents with fever, dry cough, and progressive shortness of breath over 5

days. Travel history reveals a visit to East Asia two weeks ago. Chest X-ray shows bilateral infiltrates.

What is the most likely causative agent?

- A) Influenza virus
- B) SARS-CoV
- C) RSV
- D) Parainfluenza virus

Correct Answer: B) SARS-CoV

Explanation:

SARS-CoV presents with respiratory symptoms and travel history to endemic regions. Bilateral infiltrates on X-ray are characteristic of this severe viral pneumonia.

Case 7

Clinical Case:

A 2-year-old child develops a high fever, nasal congestion, and inspiratory stridor during the fall season. The child has a seal-like barking cough.

Which viral pathogen is most likely responsible?

- A) Adenovirus
- B) RSV
- C) Parainfluenza virus
- D) Influenza virus

Correct Answer: C) Parainfluenza virus

Explanation:

Parainfluenza virus is the most common cause of croup, presenting with a barking cough, stridor, and symptoms exacerbated by cooler weather.

Case 8

Clinical Case:

A 70-year-old man with diabetes is diagnosed with influenza. On day 5 of illness, he develops worsening dyspnea and a productive cough with green sputum. Chest X-ray shows consolidation in the right lower lobe.

What complication is most likely?

- A) Secondary bacterial pneumonia
- B) Viral bronchitis

- C) Croup
- D) Reye's syndrome

Correct Answer: A) Secondary bacterial pneumonia

Explanation:

Secondary bacterial pneumonia, often caused by *Streptococcus pneumoniae* or *Staphylococcus aureus*, is a common complication of influenza in high-risk individuals.

Case 9

Clinical Case:

A 4-year-old child with no significant past medical history presents with fever, runny nose, and a dry cough. The symptoms gradually worsen, and the child begins producing yellow mucus with mild wheezing.

What is the most likely diagnosis?

- A) Viral bronchitis
- B) Influenza
- C) RSV bronchiolitis
- D) Parainfluenza infection

Correct Answer: A) Viral bronchitis

Explanation:

Viral bronchitis is characterized by an initially dry cough that becomes productive. Wheezing may occur due to airway inflammation. It is typically self-limiting in children.

Case 10

Clinical Case:

A 52-year-old healthcare worker receives an annual influenza vaccine but contracts influenza due to a new strain.

Which phenomenon explains this occurrence?

- A) Antigenic shift
- B) Antigenic drift
- C) Cross-immunity
- D) Vaccine ineffectiveness

Correct Answer: B) Antigenic drift

Explanation:

Antigenic drift involves minor changes in the influenza virus's surface proteins, leading to reduced vaccine effectiveness and the emergence of new strains.

Case 11

Clinical Case:

A 6-month-old infant presents with wheezing, nasal congestion, and respiratory distress. The parents report that similar symptoms occurred two months ago.

What is the most likely pathogen, and why is reinfection common?

- A) RSV; Lack of long-lasting immunity
- B) Influenza; Mutations in hemagglutinin
- C) Adenovirus; Resistance to neutralizing antibodies
- D) Parainfluenza; Multiple serotypes

Correct Answer: A) RSV; Lack of long-lasting immunity

Explanation:

RSV reinfections are common due to the immature immune response in young children, which fails to produce lasting immunity. This makes RSV a frequent cause of recurrent bronchiolitis.

Case 12

Clinical Case:

A 20-year-old university student develops fever, chills, and generalized body aches during an influenza outbreak on campus.

What treatment is most appropriate for this young, otherwise healthy individual?

- A) Oseltamivir within 48 hours of symptom onset
- B) Supportive care only
- C) Empiric antibiotics
- D) Intravenous antivirals

Correct Answer: B) Supportive care only

Explanation:

In healthy young adults with mild influenza, supportive care is sufficient. Antivirals are reserved for high-risk groups or severe cases.

Case 13

Clinical Case:

A 50-year-old farmer presents with fever, cough, and respiratory distress after contact with poultry. Lab results confirm H5N1 infection.

What is the most likely diagnosis, and what distinguishes this condition from seasonal flu?

- A) Bird flu; High mortality rate
- B) Swine flu; Similar mortality rate to seasonal flu
- C) Influenza A; Predominantly human-to-human transmission
- D) Common cold; Mild symptoms

Correct Answer: A) Bird flu; High mortality rate

Explanation:

H5N1, also known as bird flu, is a zoonotic infection with a high mortality rate. It is primarily transmitted from birds to humans, distinguishing it from seasonal flu, which predominantly spreads human-to-human.

Case 14

Clinical Case:

A 30-year-old man presents with a history of high fever, chills, and a cough producing rusty sputum after recovering from influenza.

What secondary infection should be suspected?

- A) Streptococcus pneumoniae
- B) Staphylococcus aureus
- C) Mycoplasma pneumoniae
- D) Haemophilus influenzae

Correct Answer: A) Streptococcus pneumoniae

Explanation:

Streptococcus pneumoniae is the most common cause of secondary bacterial pneumonia following influenza. Rusty-colored sputum is a classic finding associated with this pathogen.

Case 15

Clinical Case:

A 23-year-old pregnant woman presents with fever, myalgia, and cough. Rapid influenza diagnostic testing confirms influenza A.

What is the best management approach?

- A) Immediate antiviral therapy with oseltamivir
- B) Supportive care only
- C) Delayed treatment to monitor symptoms
- D) Corticosteroids to prevent complications

Correct Answer: A) Immediate antiviral therapy with oseltamivir

Explanation:

Pregnant women are at high risk for influenza-related complications. Prompt antiviral therapy with oseltamivir reduces the severity and duration of illness while preventing complications for both the mother and fetus.

Lecture 3

Clinical Case 1

Question:

A 25-year-old male presents to the clinic with fever, sore throat, and difficulty swallowing for 3 days. On examination:

1. Erythematous pharynx with swollen tonsils covered in white exudates.
2. Enlarged, tender anterior cervical lymph nodes.
3. No cough or nasal congestion.

What is the most likely causative organism?

- A) Epstein-Barr Virus (EBV)
- B) Streptococcus pyogenes
- C) Rhinovirus
- D) Cytomegalovirus (CMV)

Answer:

B) Streptococcus pyogenes

Explanation:

The clinical features of fever, sore throat, white exudates on the tonsils, and enlarged, tender anterior cervical lymph nodes suggest **streptococcal pharyngitis**. The absence of cough and nasal congestion, common in viral infections, supports this diagnosis. Streptococcus pyogenes, or Group A Streptococcus, is the most common bacterial cause of pharyngitis and can lead to serious complications if untreated.

Clinical Case 2

Question:

A 12-year-old boy presents with fever, joint pain, and a history of sore throat 3 weeks ago. On examination, a new heart murmur is detected. Echocardiogram reveals mitral valve regurgitation. What is the most likely mechanism behind the cardiac symptoms?

- A) Immune complex deposition in cardiac tissue
- B) Molecular mimicry between streptococcal M protein and heart tissue
- C) Direct invasion of cardiac tissue by bacteria
- D) Exotoxin-mediated damage

Answer:

B) Molecular mimicry between streptococcal M protein and heart tissue

Explanation:

This boy's symptoms are suggestive of **rheumatic fever**, a complication of **streptococcal pharyngitis**. The cardiac symptoms, including mitral valve regurgitation, arise due to **molecular mimicry**. The **M protein** of *Streptococcus pyogenes* resembles cardiac tissue proteins, triggering an autoimmune response that damages the heart valves. This is a key feature of rheumatic heart disease.

Clinical Case 3

A 9-month-old infant is brought to the clinic with excessive crying and fever. The parents report the baby has been pulling at the right ear. Examination reveals:

1. Red, bulging tympanic membrane.
2. Reduced mobility on pneumatic otoscopy.
3. Mild otorrhea.

What is the first-line treatment?

- A) Topical antibiotics
- B) Amoxicillin
- C) Tympanostomy tube placement
- D) Supportive care only

Answer:

B) Amoxicillin

Explanation:

The presentation of a **bulging tympanic membrane** with fever and ear pain suggests **acute otitis media (AOM)**, a common ear infection in children. The first-line treatment for AOM in children under 2 years is **amoxicillin**, which effectively targets the most common causative organisms, such as ***Streptococcus pneumoniae*** and ***Haemophilus influenzae***. Tympanostomy tubes are usually reserved for recurrent or severe cases.

Clinical Case 4

Question:

A 4-year-old boy presents to the emergency department with a 3-day history of sore throat, high fever, and neck pain. Examination shows:

1. Trismus (difficulty opening the jaw).
2. Muffled “hot potato” voice.
3. Decreased neck mobility.

4. Drooling and a "sniffing position."
What is the most likely diagnosis?
- A) Peritonsillar abscess
 - B) Retropharyngeal abscess
 - C) Epiglottitis
 - D) Ludwig's angina

Answer:

B) Retropharyngeal abscess

Explanation:

The clinical signs of **trismus**, **muffled voice**, **drooling**, and **decreased neck mobility** are classic for a **retropharyngeal abscess**, a serious infection that can cause airway obstruction in children. The "sniffing position" is commonly seen in upper airway infections like epiglottitis, but the absence of other signs of epiglottitis makes a retropharyngeal abscess more likely.

Clinical Case 5

Question:

An 18-year-old female presents with a 1-week history of sore throat, fever, and fatigue. Examination reveals:

- 1. Enlarged bilateral cervical lymph nodes.
 - 2. Splenomegaly.
 - 3. Tonsillar swelling with exudates.
- Rapid strep test is negative. She was treated with amoxicillin but developed a widespread rash.
- What is the most likely diagnosis?
- A) Streptococcal pharyngitis
 - B) Infectious mononucleosis
 - C) Scarlet fever
 - D) Peritonsillar abscess

Answer:

B) Infectious mononucleosis

Explanation:

The patient's symptoms, including fever, sore throat, lymphadenopathy, splenomegaly, and tonsillar exudates, along with a **negative rapid strep test**, point to **infectious mononucleosis**, commonly caused by **Epstein-Barr virus (EBV)**. The development of a rash after taking **amoxicillin** is typical in mononucleosis, and this reaction is not seen with bacterial infections like streptococcal pharyngitis.

Clinical Case 6

Question:

A 10-year-old boy presents with dark-colored urine and swelling around the eyes 2 weeks after a sore throat. Examination reveals:

1. Periorbital edema.
 2. Hypertension.
 3. Normal temperature.
- Laboratory findings:

- Urinalysis: RBC casts and proteinuria.
 - Blood tests: Elevated anti-streptolysin O (ASO) titers, low complement (C3) levels.
- What is the most likely diagnosis?
- A) IgA nephropathy
 - B) Post-streptococcal glomerulonephritis
 - C) Minimal change disease
 - D) Membranous nephropathy

Answer:

B) Post-streptococcal glomerulonephritis

Explanation:

This boy's symptoms and lab results (including **RBC casts, proteinuria, elevated ASO titers, and low C3 levels**) suggest **post-streptococcal glomerulonephritis**, a renal complication following a recent **streptococcal throat infection**. The condition results from immune-mediated damage to the kidneys due to **immune complex deposition**.

Clinical Case 7

Question:

A 3-year-old child presents with fever, irritability, and pain in the right ear. Examination reveals:

1. Tympanic membrane bulging with fluid behind it.
2. High-grade fever (39°C).
3. No discharge observed.

What is the most likely causative organism?

- A) *Streptococcus pneumoniae*
- B) *Haemophilus influenzae*
- C) *Moraxella catarrhalis*
- D) Rhinovirus

Answer:

A) *Streptococcus pneumoniae*

Explanation:

The signs of **bulging tympanic membrane** with **high fever** and **ear pain** suggest **acute otitis media (AOM)**. **Streptococcus pneumoniae** is the most common cause of AOM, particularly in children. Other bacteria like **Haemophilus influenzae** and **Moraxella catarrhalis** can also be involved, but **S. pneumoniae** remains the leading pathogen.

Clinical Case 8

Question:

A 7-year-old child presents with fever, rash, and a “strawberry tongue.” Examination reveals:

1. Fine red rash that began on the chest and spread to the extremities.
2. Sore throat with white exudates.
3. Enlarged cervical lymph nodes.

What is the most likely diagnosis?

- A) Scarlet fever
- B) Kawasaki disease
- C) Rheumatic fever
- D) Infectious mononucleosis

Answer:

A) Scarlet fever

Explanation:

The combination of **fever**, a **fine red rash** that starts on the chest and spreads, “**strawberry tongue**”, and **sore throat with exudates** is characteristic of **scarlet fever**, which is caused by **Streptococcus pyogenes**. The rash is caused by a toxin produced by the bacteria. This condition is often associated with a previous streptococcal throat infection.

Clinical Case 9

Question:

A 17-year-old male presents with severe unilateral sore throat, fever, and difficulty swallowing. Examination reveals:

1. Deviation of the uvula to the right.
2. Left-sided tonsillar swelling with a fluctuant mass.
3. Muffled “hot potato” voice.

What is the most likely diagnosis?

- A) Retropharyngeal abscess

- B) Peritonsillar abscess
- C) Ludwig's angina
- D) Acute tonsillitis

Answer:

B) Peritonsillar abscess

Explanation:

The presentation of **unilateral tonsillar swelling**, a **fluctuant mass**, **uvula deviation**, and a **“hot potato” voice** suggests a **peritonsillar abscess**, a complication of **tonsillitis**. This abscess forms between the tonsil and the surrounding tissue and often requires drainage and antibiotics for treatment.

Clinical Case 10

Question:

A 45-year-old male presents with fever, shortness of breath, and chest pain. He mentions a sore throat 2 weeks ago. Examination reveals:

1. Elevated JVP and pedal edema.
 2. Cardiac murmur.
 3. No signs of infection currently.
- What is the most likely complication?
- A) Post-streptococcal glomerulonephritis
 - B) Acute rheumatic fever
 - C) Infective endocarditis
 - D) Pericarditis

Answer:

B) Acute rheumatic fever

Explanation:

This patient's symptoms, including a **history of recent sore throat** and **cardiac findings**, suggest **acute rheumatic fever**, a sequela of **Group A Streptococcus infection**. **Cardiac involvement** can lead to valve damage, often seen as **mitral regurgitation** or **endocarditis**. The **elevated JVP** and **pedal edema** suggest heart failure due to valvular damage.

Clinical Case 11

Question:

A 6-month-old infant is brought in with fever and irritability. Parents report the child has been crying excessively and pulling at the ear. Examination reveals:

1. Fluid discharge from the ear.
2. Erythematous tympanic membrane.
3. Mild hearing loss in the affected ear.
What is the most likely diagnosis?
 - A) Otitis externa
 - B) Acute otitis media
 - C) Chronic otitis media
 - D) Eustachian tube dysfunction

Answer:

B) Acute otitis media

Explanation:

The presence of **fluid discharge**, **erythematous tympanic membrane**, and **fever** points to **acute otitis media** (AOM), a common ear infection in infants. It is usually caused by **bacterial or viral pathogens** and is often associated with hearing loss due to fluid accumulation in the middle ear.

Clinical Case 12

Question:

A 22-year-old woman presents with fever and sore throat. Examination reveals:

1. Petechiae on the palate.
2. Tonsillar swelling with exudates.
3. Cervical lymphadenopathy.
The rapid strep test is positive.
4. What is the recommended first-line treatment?
 - A) Amoxicillin
 - B) Erythromycin
 - C) Supportive care
 - D) Azithromycin

Answer:

A) Amoxicillin

Explanation:

This patient has **streptococcal pharyngitis**, and the first-line treatment is **amoxicillin**. This antibiotic effectively targets **Streptococcus pyogenes** and is preferred for its safety profile and effectiveness in treating bacterial throat infections.

Clinical Case 13

Question:

A 5-year-old boy presents with a sore throat, fever, and difficulty breathing. Examination reveals:

1. Inspiratory stridor.
2. Drooling.
3. "Thumbprint sign" on lateral neck X-ray.

What is the most likely diagnosis?

- A) Epiglottitis
- B) Retropharyngeal abscess
- C) Laryngotracheobronchitis (Croup)
- D) Tonsillitis

Answer:

A) Epiglottitis

Explanation:

This child's symptoms of **drooling, inspiratory stridor**, and the **"thumbprint sign"** on lateral neck X-ray are classic for **epiglottitis**, a life-threatening inflammation of the epiglottis. This condition, often caused by **Haemophilus influenzae type B (Hib)**, can cause airway obstruction and requires urgent treatment. Prompt recognition and securing the airway are crucial to prevent respiratory failure.

clinical Case 14

Question:

A 40-year-old male presents with severe sore throat, high fever, and difficulty swallowing. Examination shows swelling of the floor of the mouth and submandibular area, with an elevated tongue.

What is the most likely diagnosis?

- A) Ludwig's angina
- B) Peritonsillar abscess
- C) Retropharyngeal abscess
- D) Epiglottitis

Answer:

A) Ludwig's angina

Explanation:

The presentation of **severe sore throat, fever, swelling of the floor of the mouth**, and **elevated tongue** suggests **Ludwig's angina**, a severe, rapidly progressing **submandibular space infection** that can cause airway obstruction. It is often caused by **oral bacteria** such as **Streptococcus species** and **Anaerobes**, and requires urgent medical management, including airway management and IV antibiotics.

Clinical Case 15

Question:

A 15-year-old girl presents with fever and severe sore throat. Examination reveals:

1. Enlarged tonsils with exudates.
2. Posterior cervical lymphadenopathy.
3. Positive Monospot test.

What is the most likely diagnosis?

- A) Streptococcal pharyngitis
- B) Infectious mononucleosis
- C) Scarlet fever
- D) Acute tonsillitis

Answer:

B) Infectious mononucleosis

Explanation:

The combination of **fever, severe sore throat, tonsillar exudates, and posterior cervical lymphadenopathy**, along with a **positive Monospot test**, points to **infectious mononucleosis**, usually caused by **Epstein-Barr virus (EBV)**. This viral infection is common in adolescents and young adults, and it can cause significant **lymphadenopathy, splenomegaly, and prolonged fatigue**.

Lecture 4

1. What is the most common cause of acute sinusitis?

- A. Bacterial infection
- B. Viral infection
- C. Fungal infection
- D. Allergic rhinitis

Answer: B. Viral infection

Explanation: Acute sinusitis is often caused by a viral upper respiratory tract infection. While bacterial infections can occur, they are less common and usually follow a viral infection that blocks sinus drainage.

2. Which of the following is a first-line antibiotic for bacterial sinusitis?

- A. Amoxicillin
- B. Amoxicillin/clavulanate (Augmentin)
- C. Doxycycline
- D. Fluoroquinolones

Answer: B. Amoxicillin/clavulanate (Augmentin)

Explanation: Amoxicillin/clavulanate is the first-line treatment for bacterial sinusitis because it covers common pathogens and addresses beta-lactamase-producing bacteria

3. What symptom is most commonly associated with chronic sinusitis?

- A. High-grade fever
- B. Reduced sense of smell
- C. Acute facial pain
- D. Severe nasal congestion

Answer: B. Reduced sense of smell

Explanation: Chronic sinusitis typically presents with persistent nasal congestion, facial pressure, and a reduced sense of smell lasting more than three months.

4. A child with nasal congestion and postnasal drip is most likely experiencing which sinusitis type?

- A. Acute bacterial sinusitis
- B. Subacute sinusitis
- C. Chronic sinusitis
- D. Viral sinusitis

Answer: A. Acute bacterial sinusitis

Explanation: Postnasal drip, nasal congestion, and other persistent symptoms lasting more than 10 days often indicate acute bacterial sinusitis.

5. Which of the following is a risk factor for sinusitis?

- A. Overhydration
- B. Allergic rhinitis
- C. Frequent outdoor activity
- D. High protein diet

Answer: B. Allergic rhinitis

Explanation: Allergic rhinitis causes inflammation and edema of the nasal mucosa, increasing the risk of sinus obstruction

lecture 4 clinical cases

1.

A 7-year-old boy presents with a 12-day history of nasal congestion, yellow nasal discharge, facial pain, and worsening nighttime cough. He initially seemed to improve after a cold but then worsened. Examination shows tenderness over the maxillary sinuses and purulent nasal discharge.

What is the most appropriate next step in management?

- A. Prescribe amoxicillin/clavulanate (Augmentin)
- B. Perform a sinus puncture for culture
- C. Start intranasal corticosteroids alone

D. Order a sinus CT scan

Answer: A. Prescribe amoxicillin/clavulanate (Augmentin)

Explanation: The child's symptoms are consistent with acute bacterial sinusitis, particularly after a worsening following initial improvement. Amoxicillin/clavulanate is the first-line treatment. Imaging or culture is reserved for severe or non-responsive cases.

2.

A 4-year-old girl presents with a high fever, difficulty swallowing, drooling, and a muffled voice. She is sitting upright, leaning forward with her hands on her knees. On examination, stridor and respiratory distress are noted.

What is the most likely diagnosis?

- A. Acute bacterial sinusitis
- B. Epiglottitis
- C. Laryngitis
- D. Viral croup

Answer: B. Epiglottitis

Explanation: The classic "tripod position," drooling, and muffled voice suggest epiglottitis. This condition is life-threatening and requires immediate airway management and antibiotics

3.

A 35-year-old woman reports three months of nasal congestion, facial pressure, and decreased sense of smell. She denies fever or acute symptoms. Examination reveals thick yellow nasal discharge and swollen nasal turbinates.

What is the most likely diagnosis?

- A. Acute sinusitis
- B. Subacute sinusitis
- C. Chronic sinusitis
- D. Allergic rhinitis

Answer: C. Chronic sinusitis

Explanation: Chronic sinusitis is characterized by symptoms persisting for more than 12 weeks, including nasal congestion, facial pressure, and reduced sense of smell.

4.

A 6-year-old boy presents with persistent cough that worsens at night, along with nasal congestion and thick green nasal discharge for 14 days. Examination shows postnasal drip and tenderness over the maxillary sinuses.

What is the best initial treatment?

- A. Intranasal corticosteroids alone
- B. Antibiotic therapy with amoxicillin/clavulanate
- C. Antihistamines
- D. Sinus irrigation

Answer: B. Antibiotic therapy with amoxicillin/clavulanate

Explanation: The persistent symptoms for more than 10 days, with nighttime cough and sinus tenderness, indicate bacterial sinusitis. First-line treatment is amoxicillin/clavulanate.

5.

A 10-year-old child presents with a recent history of a viral upper respiratory infection, followed by sudden onset of facial pain, fever, and purulent nasal discharge. Examination shows erythematous nasal mucosa and tenderness over the frontal sinuses.

What complication is most likely if the condition is left untreated?

- A. Orbital cellulitis
- B. Cavernous sinus thrombosis
- C. Brain abscess
- D. All of the above

Answer: D. All of the above

Explanation: Untreated bacterial sinusitis can lead to serious complications, including orbital cellulitis, cavernous sinus thrombosis, and brain abscess, especially when involving the frontal sinuses.

6.

A 5-year-old girl presents with a 10-day history of fever, nasal congestion, facial swelling, and worsening irritability. Her mother mentions that she was diagnosed with a cold two weeks ago, but the symptoms have persisted. On examination, she has orbital swelling and redness over the left eye.

What is the most likely diagnosis?

- A. Allergic rhinitis
- B. Orbital cellulitis secondary to sinusitis
- C. Acute bacterial sinusitis
- D. Viral conjunctivitis

Answer: B. Orbital cellulitis secondary to sinusitis

Explanation: Orbital cellulitis is a serious complication of bacterial sinusitis. The presence of fever, facial swelling, and orbital involvement (redness and swelling around the eye) suggests the infection has spread to the orbit.

7.

A 40-year-old man presents with a 3-week history of persistent nasal congestion, facial pressure, and purulent nasal discharge. He also complains of occasional headaches but denies fever.

Examination reveals inflamed nasal mucosa and thick yellow nasal discharge.

What is the most appropriate diagnostic step?

- A. CT scan of the sinuses
- B. Nasal endoscopy
- C. Clinical diagnosis based on history and physical examination
- D. Culture of nasal discharge

Answer: C. Clinical diagnosis based on history and physical examination

Explanation: Sinusitis is usually a clinical diagnosis based on symptoms and examination findings. Imaging or other diagnostic tests are reserved for unresponsive or severe cases.

8.

A 3-year-old boy is brought to the emergency department with a 24-hour history of high fever, difficulty breathing, and drooling. He appears anxious and is sitting in the tripod position. Stridor is noted on auscultation.

What is the next best step in management?

- A. Intravenous antibiotics and observation
- B. Immediate intubation in the emergency room
- C. Emergency tracheostomy
- D. Keep the child calm and prepare for intubation in the operating room

Answer: D. Keep the child calm and prepare for intubation in the operating room

Explanation: This presentation suggests epiglottitis, a life-threatening emergency. Attempting to intubate in the emergency room may cause airway obstruction. Intubation in a controlled environment (operating room) is safer.

9.

A 12-year-old boy presents with a history of recurrent sinus infections, with four episodes in the past year. Each episode resolved with antibiotic therapy, but he has no ongoing symptoms.

What is the most likely diagnosis?

- A. Chronic sinusitis
- B. Subacute sinusitis
- C. Recurrent acute bacterial sinusitis
- D. Allergic rhinitis

Answer: C. Recurrent acute bacterial sinusitis

Explanation: Recurrent acute bacterial sinusitis is defined as four or more episodes of sinusitis within a 12-month period, with normal function between episodes.

10.

A 28-year-old woman presents with a 3-day history of hoarseness, dry throat, and a mild dry cough. She denies fever, difficulty swallowing, or significant throat pain. She is a professional singer and has been performing extensively.

What is the most likely diagnosis?

- A. Acute laryngitis
- B. Chronic laryngitis
- C. Viral pharyngitis
- D. Vocal cord polyps

Answer: A. Acute laryngitis

Explanation: Acute laryngitis is often caused by overuse of the voice or viral infection. The symptoms of hoarseness and dry throat in a professional singer point to this diagnosis.

11.

A 16-year-old boy presents with a sore throat, mild fever, and a gray-white membrane over the tonsils. Attempting to remove the membrane results in bleeding.

What is the most likely diagnosis?

- A. Streptococcal pharyngitis
- B. Diphtheria
- C. Infectious mononucleosis
- D. Viral pharyngitis

Answer: B. Diphtheria

Explanation: The hallmark of diphtheria is the presence of a gray-white pseudomembrane over the tonsils, which bleeds when removed. This condition requires urgent treatment with antibiotics and antitoxins.

12.

A 6-year-old boy presents with fever, nasal congestion, and purulent nasal discharge for 7 days. His symptoms are now improving. Examination reveals mild nasal mucosal inflammation and clear postnasal discharge.

What is the most appropriate management?

- A. Prescribe antibiotics
- B. Reassure and observe
- C. Order sinus radiographs
- D. Start intranasal corticosteroids

Answer: B. Reassure and observe

Explanation: Viral sinusitis typically resolves within 7-10 days. Since the symptoms are improving, no antibiotics are necessary, and observation is appropriate.

13.

A 4-year-old boy is brought to the emergency department with high fever, stridor, and a barking cough. He has mild respiratory distress but is not drooling. His symptoms started after a viral upper respiratory infection.

What is the most likely diagnosis?

- A. Epiglottitis
- B. Croup
- C. Acute laryngitis
- D. Bronchiolitis

Answer: B. Croup

Explanation: Croup presents with a barking cough, stridor, and respiratory distress following a viral illness. Unlike epiglottitis, drooling and severe distress are not common.

14.

A 45-year-old man presents with nasal congestion, facial pain, and purulent nasal discharge for 3 weeks. He has a history of poorly controlled diabetes. Examination reveals black necrotic tissue in the nasal cavity. What is the most likely diagnosis?

- A. Acute bacterial sinusitis
- B. Allergic fungal sinusitis
- C. Chronic sinusitis
- D. Mucormycosis

Answer: D. Mucormycosis

Explanation: The presence of black necrotic tissue in the nasal cavity, especially in a diabetic patient, is highly suggestive of mucormycosis, a fungal infection.