Bronchiolitis

Learning objectives

1-identification of different etiology of wheezy child
2-clinical evaluation for child presented with wheeze
3- ability to manage common causes of acute lower respiratory tract infections and their emergency presentations
4-famillt counseling about home care and preventive measures

Acute bronchiolitis is a common disease of the lower respiratory tract in infants ,resulting from inflammatory obstruction of the small airways with severe disease more common among infant aged 1-3 mo. bronchiolitis is seasonal, with peak activity during winter and early spring

Etiology and epidemiology

Acute bronchiolitis is predominantly a viral disease , respiratory syncytial . virus (RSV) is responsible for more than 50% of cases
other agents include parainfluenza ,adenovirus ,mycoplasma and other viruses
Bronchiolitis is more in males

Clinical manifestations

1-the infant first develops a mild
upper respiratory tract infection
2-diminished appetite and fever of 38.5-39 C
gradually ,respiratory distress ensues ,with paroxysmal wheeze, cough ,dyspnea ,and irritability
. 3- the infant is often tachypneic , which interferes with feeding
4--apnea may be more prominent in very young infants

physical examination is

1- most prominent wheezing and tachypnea
auscultation may reveal fine crackles or overt wheezes
2- prolongation of the expiratory phase of breathing.
3-barely audible breath sounds suggest very severe disease with nearly complete bronchiolar obstruction
4-hyperinflation of the lungs may permit palpation of the liver and spleen

investigations

CXR : may reveals hyperinflated lungs with patchy atelectasis
the diagnosis is clinical especially with first wheezing episode

Differential diagnosis

1-asthma : is most commonly confused with acute bronchiolitis during the first episode
2-foreign body inhalation
3-congestive heart failure

4-cystic fibrosis
5- pertussis (whooping cough)
.**Course and prognosis**
. Apnea , respiratory acidosis may occur
Causes of death : apnea, uncompensated respiratory acidosis and severe dehydration
Higher mortality occur in patients with congenital heart disease , chronic lung disease and immunodeficiency
Treatment
Infants with respiratory distress should be hospitalized ;the mainstay of the . treatment is supportive
a-if hypoxemia the child should received cool humidified oxygen
d- tracheal intubation: if there is any risk for further respiratory decompensation
e-A number of agents have been proposed as adjunctive therapies for bronchiolitis
1- bronchodilators
2-Nebulized epinephrine may be more effective than short acting B-agonist
3-Corticosteroids ,whether parenteral ,oral ,or inhaled are widely used , they are not indicated for previously healthy infants with RSV may be given for patient with history of atopy
4-Ribavirin ,an antiviral agent administered by aerosol, has been used for infants with congenital heart disease or chronic lung disease
5-antibiotic have no value unless there is secondary bacterial pneumonia
Prevention
Pooled hyperimmune RSV intravenous immunoglobulin (RSV-IVIG (,RespiGam) and palivizumab ,(synagis)
Meticulous hand washing is the best measure to prevent nosocomial transmission

pneumonia

Pneumonia is an inflammation of the parenchyma of the lungs
Pneumonia a significant cause of mortality in childhood throughout the world ,particularly in developing countries
Epidemiology and Causes
Viral pathogens are the predominant cause of pneumonia in infants and children under 5 year of age .
The major viral pathogens are
RSV(Commenest). 2. PIV(parainfluenza). 3. influenza. 4. Adenovirus
Nonviral pathogens including : S.pneumoniae

M.Pneumoniae and Chlamydia pneumoniae are common in children over 5 year
Other bact. Causes : group A beta strept., H.influenzae , staph. Aureus
Specific risk factors for the development of pneumonia include
1- lung disease such as asthma or cystic fibrosis
2-anatomic problems ;such as tracheoesophageal fistula-
3--gastroesophageal reflux disease with aspiration
4--Neurologic diseases
5--immunodeficiency diseases

Clinical manifestations

Viral and bacterial pneumonias are most often preceded by several days of symptoms of an upper respiratory tract infection ,typically rhinitis and cough

in viral pneumonia

1-fever is usually present. temp are generally lower than bact pneumonia
2-tachypnea , intercostal ,subcostal and suprasternal retractions .nasal flaring
3-Severe infection may acompained by cyanosis and respiratory fatigue
4- Auscultation :crackles and wheezing

bacterial pneumonia

high fever accompanied by drowsiness with intermittent periods of restlessness ,rapid respirations ,adry cough and occasionally delirium
in infants there may be a prodromal symptoms of upper respiratory tract infection and diminished appetite ,associated gastrointestinal disturbance characterized by vomiting ,anorexia ,diarrhea and abdominal distension secondary to paralytic ileus
Physical findings depending on the stage of pneumonia
1-early course of illness ,diminished breath sound ,scattered crackles and rhonchi are commonly heard over the affected lung field
2-consolidation phase or complications of pneumonia such as (effusion ,emphysema or pyopneumothorax) dullness on percussion is noted and .breath sounds markedly diminished over the affected lung field
Abdominal distension from swallowed air or ileus. liver may seem enlarged secondary to hyperinflation of the lungs .nuchal rigidity may be prominent with right upper lobe pneumonia

Diagnosis

1-CXR:- i viral pneumonia is characterized by hyperinflation with bilateral interstitial infiltrate . lobar consolidation, is typically seen with pneumococcal pneumonia
2 -WBC count .in viral pneumonia normal with lymphocyte predominance
In bacterial pneumonia -elevated WBC count(15,000-40,000/mm3) with neutrophils

3-The definitive diagnosis of bacterial infection requires isolation of an - organism from the blood ,pleural fluid or lung . blood cultures are positive in 10-30% pn . pneumonia
culture of suptum is of no value in the diagnosis of pneumonia
4-in Mycoplasma .pneumoniae ,cold agglutinins are found in the blood in . about 50% of patients

Treatment

1-mildly ill children who do not require hospitalization amoxicillin is recommended ,therapeutic alternatives include cefuroxime axetil or .amoxicillin/clavulanate
2-school aged children and in those in whom infection with M. pneumoniae is suggested a macrolide antibiotic such as azithromycin is an appropriate therapeutic choice
3-the empirical treatment of suspected bacterial pneumonia in hospitalized . child parenteral cefuroxime ,cefotaxime is the mainstay of therapy
4-staphylococcal pneumonia (e.g pneumatoceles ,empyema) ,intial therapy should include vancomycin or clindamycin
5-if viral pneumonia is suggested (with mildly ill, no respiratory distress)is reasonable to withhold antibiotic therapy

Indication for hospitalization
Age <6 mo
Sickle cell anemia with acute chest syndrome
Multiple lobe involvement
Immunocompromised state
Moderate to severe respiratory distress
Requirement for supplemental oxygen
Complicated pneumonia
Dehydration, vomiting or inability to tolerate oral fluids
No response to appropriate oral antibiotic therapy

Complications

1-direct spread of bacterial infection within the thoracic cavity (e.g pleural (effusion ,empyema ,and pericarditis)
Haematogical spread :bacteremia ,meningitis

Prevention of Pneumonia

1-Control of environmental factors (indoor air pollution
2-Dealing with malnutrition
3-Addressing prevalent micronutrient deficiency such as zinc-and vitamin A deficiencies
4-Promotion of household behaviors such as exclusive
5-breastfeeding and handwashing
6-Satisfactory housing condition with good ventilation and
adequate light, Avoidance of overcrowding

Prevention by Vaccine
(MMR) vaccine and pertussis ,(DPT), Pneumococcal H. Influenzae B Conjugate Vaccine