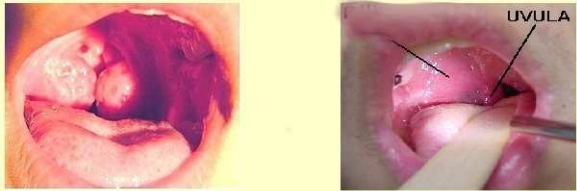


Airway compromise

Infectious mononucleosis



Streptococcal pharyngitis



Quinsy



Ludwig's angina

Croup

Infectious mononucleosis

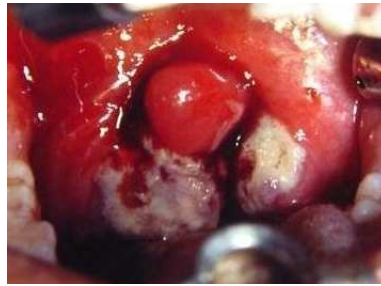
Original descriptions

1800s -infectious mononucleosis
recognized as clinical syndrome

consisting of fever, pharyngitis, and adenopathy

Term glandular fever first used in 1889 by German physicians
termed Drusenfieber

Association with EBV was described in late 1960s



Nil Feodorovich Filatov

Russian pediatrician, (1847 – 1902) Moscow – described
mononucleosis under name of "idiopathic denitis".

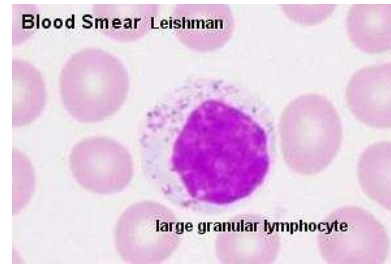
Sprunt and Evans described clinical characteristics of Epstein-Barr
virus (EBV) infectious mononucleosis in the Johns Hopkins
Medical Bulletin in 1920 entitled "Mononuclear leukocytosis in
reaction to acute infection"

Thomas Peck Sprunt

American physician, born 1884.

Epstein Barr Virus

- Transmitted via intimate contact with body secretions, primarily oropharyngeal secretions



- EBV infects B lymphocytes in the oropharyngeal epithelium
- Circulating B lymphocytes spread infection throughout entire reticular endothelial system liver, spleen, peripheral lymph nodes
- Infection of B lymphocytes results in humoral and cellular response to the virus

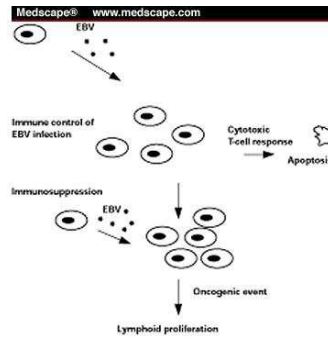


Basis of response

- Fever -cytokine release consequent to B-lymphocyte invasion by EBV
- Lymphocytosis -proliferation of EBV-infected B lymphocytes in reticulo-endothelial system
- Pharyngitis -proliferation of EBV- infected B lymphocytes in the lymphatic tissue of the oropharynx.
- Humoral response against EBV structural proteins is basis for diagnostic test
- Natural killer (NK) cells and predominantly CD8 and cytotoxic T cells control proliferating B lymphocytes infected with EBV

T-lymphocyte response

- critical in determining response to infection.
- Efficient T-cell response controls primary EBV infection with lifelong suppression of EBV
- Ineffective response may result in uncontrolled B-cell proliferation and B-lymphocyte malignancies

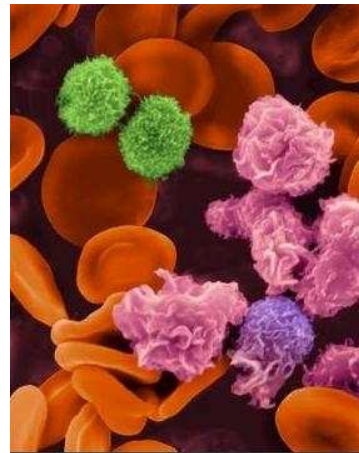


Epidemiology

- 90% of adults worldwide have serologic evidence of prior EBV infection
- Mean age at infection varies with socioeconomic factors

In United States:

- 50% of 5-year-old children
- Up to 70% of first-year college students
- Infection in children is most prevalent in low socioeconomic settings
- The peak rate of EBV-IM occurs between 15 and 19 years in industrialized countries, the annual incidence being 345 to 671 cases per 100,000
- University freshmen -EBV antibodies developed in 13% of susceptible students by 9 months after enrollment.
- EBV-IM developed in 74% of the seroconverters

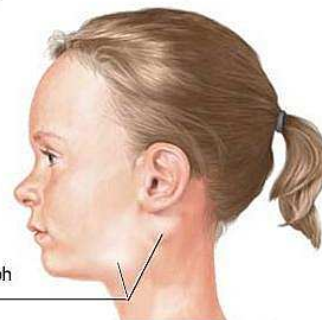


EBV-Infectious Mononucleosis

- Incidence = 2 – 4 per 100,00 per year over 35 years of age
- Incidence dramatically higher in younger persons
- 30 times higher in whites than in blacks in the United States
- No gender differences
- Chance of acute EBV infection developing into EBV-IM appears to increase with age
- Occurs in less than 10% of children but in 20 -70% of adolescents and young adults
- Good sanitation and living arrangements appear to increase the risk for EBV-IM by postponing exposure to EBV until later in life
- One study recovered EBV in oropharyngeal secretions in nearly 20% of asymptomatic adults in US

Mononucleosis
causes:

- Fever
- Fatigue
- Sore throat
- Swollen lymph glands



ADAM.

Therapeutics

Aspirin may be associated with Reye's syndrome. (Bailey RE. Diagnosis and treatment of infectious mononucleosis. Am Fam Physician 1994;49(4):879-88)

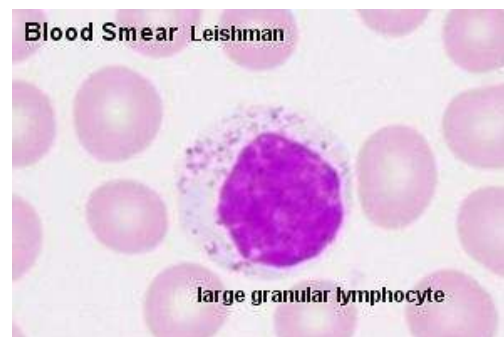
Acetaminophen may worsen hepatitis if present

Amoxicillin/ampicillin causes a morbiliform, allergic-like rash in 90%

Corticosteroids associated with increased risk of EBV causing lymphoma in some

Acyclovir and steroids - double-blinded RCT - no significant clinical effect on the duration of overall symptoms but trend in favor of improvement of individual symptoms in first few days.

- Statistically significant decrease in EBV replication (viral shedding) in treatment group -transient, during treatment with Acyclovir
- No impairment of EBV-specific immunity -humoral and cellular and no adverse events in treatment group



Scarlet fever

Little Women by Louisa May Alcott (1868) - Beth contracts scarlet fever and, after a long convalescence succumbs to the illness

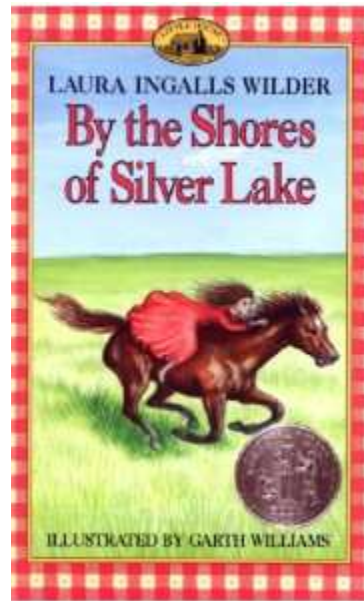
The Velveteen Rabbit by Margery Williams (1922) - The main

protagonist, a small boy, contracts scarlet fever and his toys are all burned

By the Shores of Silver Lake by Laura Ingalls

Wilder (1939) - Prior to the start of the book,

Laura's older sister Mary has been left blind by a bout with scarlet fever



Virulence

“.....read any novel of the 18th century and Scarlet Fever often seems to be followed by many months in convalescence institutions. Most children now are ill for under a week. While used as an example of benefits of antibiotics, it is also true that the bacteria mutated in the early-mid 20th century into less virulent forms. 'Scarlatina' describes the milder disease. “

NIH Fact Sheet

"Group A Streptococcal Infections", March 1999.

“ Some strains of group A streptococci (GAS) cause severe infection. Those at greatest risk include children with chickenpox; persons with suppressed immune systems; burn victims; elderly persons with cellulitis, diabetes, blood vessel disease, or cancer; and persons taking steroid treatments or chemotherapy. IV drug users also are at high risk. Severe disease may also occur in healthy persons with no known risk factors. All severe infections may lead to shock, multisystem organ failure, and death. “

Original descriptions

Daniel Sennert (1572 – 1637) celebrated German physician born in Breslau son of poor cobbler. Father died when he was 13. Received doctor's degree in 1601 from University of Wittenberg and appointed chair of medicine next year, a position he held for 35 years.

“For although like erysipelas it attacks almost the entire body, however I did not see adults, as usually happens in erysipelas, but infants alone it attacked”

Thomas Sydenham (1624 – 1689)

- Hippocrates of English medicine

“I have been very careful to write nothing but what was the product of faithful observation and neither suffered myself to be deceived by idle speculation, nor have deceived others by obtruding anything upon them but downright fact”

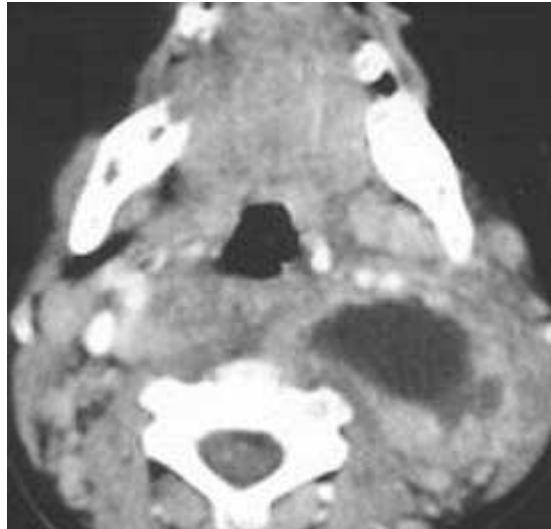
“Among the remedies which it has pleased Almighty God to give to man to relieve his sufferings, none is so universal and so efficacious as opium.”

“This attacks infants most, and that towards the end of summer. Shivers and chills at the commencement; but no great depression. The whole skin is marked with red spots, more frequent, more diffused, and more red than in measles. These last two or three days. They then disappear; leaving the skin covered with brawny squamulae, as if powdered with meal”



Quinsy

- Very sore throat
- Difficulty swallowing
- Difficulty opening mouth
- Drooling saliva
- “Hot potato” voice
- Fever and chills
- Elevated WBC



“After riding through a bad winter storm, General Washington caught a cold. His

throat became infected making it difficult to breathe. On

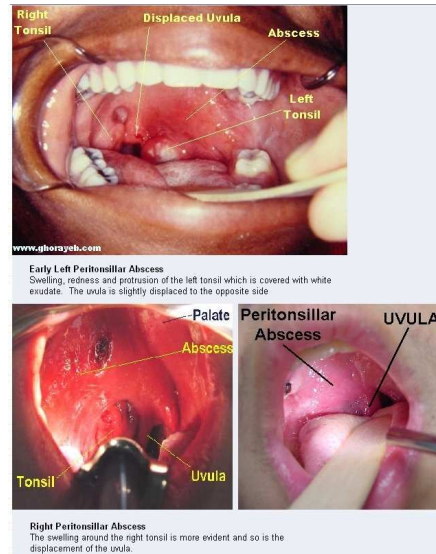
December 14, 1799, at the age of 67, George Washington died from this infection called

quinsy. As he wished, he was buried at Mount Vernon. People everywhere mourned. Henry Lee, who had been with Washington in the Revolutionary War, wrote that Washington was ...first in war, first in peace and first in the hearts of his countrymen. General Lee read this eulogy in Congress. Everyone shared his feelings.”



Treatment

- Clindamycin PO or IV
- Augmentin or Unasyn
- Metronidazole + Penicillin
- Incision and Drainage



Tonsillectomy

- Emergent
- Elective

Ludwig's Angina

Wilhelm Friedrich von Ludwig, German surgeon and obstetrician, born September 16, 1790, Uhlbach near Stuttgart; died December 14, 1865. He began his medical career as apprentice to a surgeon in Neuenburg and later studied medicine at the University of Tübingen where he graduated M.D. in 1811.

Achieved recognition as ultimate authority on surgery and obstetrics with royal family and among his colleagues. Description of "his" angina was only notable clinical observation. He suffered with cataracts and renal stones. On death, left majority of fortune to found hospital for the poor in Württemberg

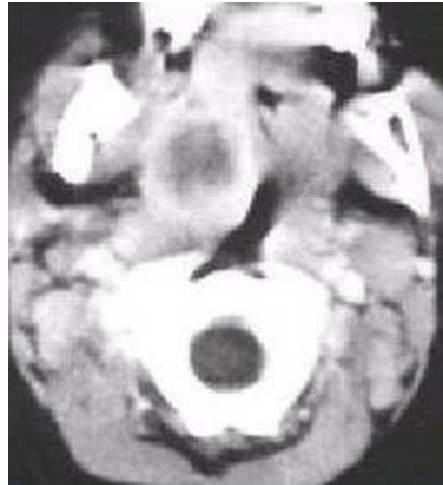
Submandibular space infection

- Always bilateral
- Both submandibular and sublingual spaces involved
- Rapidly spreading cellulitis
- Characteristically woody or brawny swelling starting in floor of mouth
- 80% follow infection of 2nd or 3rd mandibular molar
- Death by airway compromise



Clinical Features

- Febrile
- Mouth pain
- Stiff neck
- Drooling
- Dysphagia
- Leaning forward
- Tender, symmetric, indurated swelling
- Asymmetry is ominous



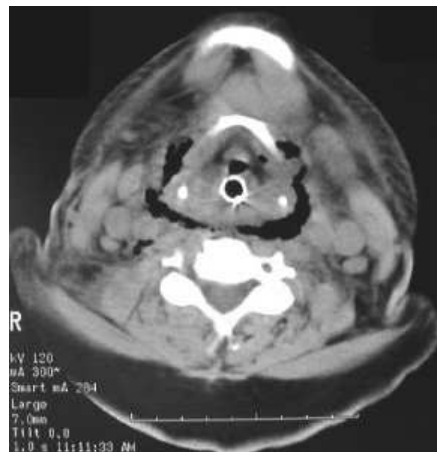
Treatment

- Airway control
- Flexible fiberoptic intubation
- Tracheostomy
- Cricothyroidotomy

Antibiotics

- Penicillin G

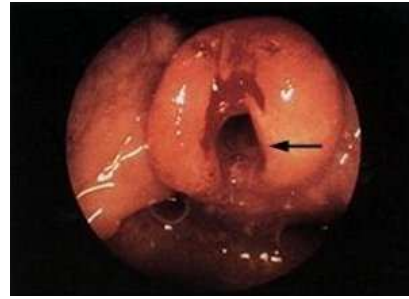
Drainage - falling out of favor



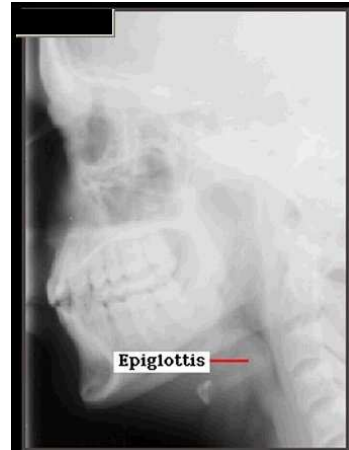
Epiglottitis

Presentation

- Drooling (80%), dysphagia, and
- Distress
- Fever
- Respiratory distress or air hunger
- Muffled voice



Differential - Croup occurs in younger children, has a viral prodrome, a barking cough and rarely appears toxic



Lateral X-Ray of Epiglottitis showing the enlarged epiglottis. This is also known as the thumb sign.

Physical Exam

- The child is febrile, appears toxic or anxious
- Assumes a characteristic tripod posture with neck extended
- Stridor frequently present
- Drooling frequently present
- Cough is rare

Epidemiology

Children's Hospital of Philadelphia 10.9 per 10,000 before 1990.

After the vaccine was introduced, 1.8 per 10,000 admissions.

MWR 2003

2,013 cases of H influenzae were reported in all ages in the United States. only 32 cases of serotype b infection in patients younger than 5 years.

Sweden

20.9 per 100,00 per year in 1987

0.9 per 100,000 per year in 1996

Management

In centers with pediatric expertise and defined protocols mortality rate approaches zero morbidity rate less than 4%.

Delay in diagnosis associated with a 9-18% mortality rate.

Management of patients without intubation is associated with a 6% mortality rate.

Emergency Care

- Immediate transport to the nearest appropriate facility (emergency department approved for pediatrics [EDAP] or pediatric critical care center. [PCCC])
- Vital signs or any other diagnostic procedures are secondary to securing airway.
- Child should be allowed to assume a position of comfort. The parent should be allowed to hold the child
- Oxygen may be administered if it does not disturb the child.
- If the child has a respiratory arrest, first attempt ventilation with a bag-valve mask. Long, slow ventilations are best.
- Orotracheal intubation should be attempted if unable to ventilate the child. Needle cricothyroidotomy is used only if unable to secure an airway.
- If the child is to be transported to another facility, the airway should be secured. Only then should an IV line be placed. The child should be sedated and given antibiotics prior to transfer

Paramyxoviridae

- Important human pathogens and common cause of respiratory disease in children.
- Approximately half of the cases of infantile bronchiolitis, croup, and pneumonia are caused by parainfluenza and respiratory syncytial viruses.
- Incidence of measles and mumps has decreased greatly in developed nations due to immunization campaigns

Measles

Distinguished from smallpox as early as 9th century by an Arab physician, Rhazes of Baghdad.

No record of repeated epidemics until 11th and 12th centuries. First mentioned as a childhood disease

in 1224. The Danish physician Peter

illuminating principles of infection and epidemiology during his trip to the Faroe Islands in 1846.



Mumps

Recognized as early as the 5th century B.C. by Hippocrates who described mild epidemic illness involving swelling near the ears, sometimes painful swelling of one or both testes. In the 18th century, first association of mumps infection with the central nervous system involvement. "Mumps" believed to come from old English verb meaning "to grimace, grin, or mumble."



RSV

Neither parainfluenza viruses nor respiratory syncytial virus isolated until fairly recently.

The four human parainfluenza viruses were recognized between 1956 and 1960 and RSV was first isolated in 1956 from a symptomatic lab chimp during an outbreak of cold-like illnesses. Soon after, RSV was isolated from one child with pneumonia and one child with croup in Baltimore.

Treatment

Steam inhalation and mist therapy.

Two studies evaluating supersaturated cold air – no evidence of benefit.

Double-blind RCT with moderately severe croup -no benefit from mist (supersaturated air) therapy when given in addition to oral dexamethasone in terms of croup score, oxygen saturation, heart rate or respiratory rate over 2 hours.

Oxygen

- No RCTs of oxygen therapy.
- Oxygen is initial treatment before the administration of pharmacological treatment in the hospital setting.
- Theoretically, relief of hypoxia should:
 - increase respiratory muscle endurance
 - increase lung oxygen reserves
 - make intubation under anesthesia safer

Steroids

Dexamethasone and budesonide are effective in relieving the symptoms of croup as early as six hours after treatment.

Fewer return visits and/or (re)admissions are required and the length of time spent in hospital is decreased in inpatients. Dexamethasone is also effective in mild croup populations

Nebulised corticosteroids

- 2–4 mg of nebulised budesonide shown to be effective
- Onset of action within 30 minutes, comparing favorably with systemically administered corticosteroids (1 hr)

(Response to systemic corticosteroids at less than one hour has not been assessed.)

