



# Measles, Mumps and Rubella

MBChB III

Prof E Maleche Obimbo

Dept of Paediatrics, UoN

# Measles

## Etiology:

- Measles virus, and RNA virus of genus Morbillivirus
- One serotype

## Epidemiology:

- Was endemic throughout the world
- Now due to immunization, rare in developed countries
- Still relatively common developing countries, occurs in epidemics during cold wet seasons.


# Transmission

- Airborne – by droplets
- Highly contagious, 90% of susceptible family contacts get disease
- Highest risk group is late infancy
- Humans only host

# Clinical findings

+/- History of contact with case of measles

Three clinical stages:

- 1) Incubation period 10 – 12 days
- 2) Prodrome – 2-3 days
  - Low grade fever, coryza, dry cough, Kopliks spots, conjunctivitis
- 3) ~~Enanthem~~ **Exanthem**
  - Maculopapular rash – starts face spreads to trunk and extremities, coalesces and desquamates
  - High fever
  -  Conjunctivitis

# Measles



# Complications and Sequelae

## Respiratory

- Occur in ~ 15% of patients
- Laryngo-tracheo-bronchitis (LTB) --> Barking cough and stridor
- Bronchiolitis, viral pneumonia, bacterial pneumonia --> Start on antibiotics
- Bacterial superinfection of middle ear

# Complications

## CNS

- Acute encephalitis, myelitis (guillian barre syndrome)
- Late – subacute sclerosing panencephalitis



# Complications

- Exacerbates vitamin A deficiency - xerophthalmia and kerato-malacia
- Hemorrhagic measles
- Transient immuno-suppression leading to reactivation or progression of tuberculosis

- Dry cornea - keratomalacia

- Hemorrhagic measles - rashes can bleed... esp in the mucosa



# Laboratory Findings

- **Leucopenia** with relative lymphocytosis
- Serum IgM antibody detectable ~ 3days after appearance of rash – confirms diagnosis
- Nasopharyngeal cells – fluorescent antibody staining of antigen diagnostic
  - Viral PCR
  - Viral Culture

# Treatment

- Therapy mainly supportive
- Eye – antibiotic eye drops
- Cough – relieve cough
- Antipyretics – paracetamol
- Secondary bacterial infections – antibiotics (pneumonia – parenteral, eye - topical)
- Nutrition – malnourished give **vitamin A**

- Don't give anti-tussives/cough suppressants to a child. Treat the cause of the cough.

- Vitamin A dose: 100,000 IU; Above 2 years 200,000 IU

# Prevention

- Immunization – live attenuated vaccine,
  - Kenya, once at age 9 months
  - West – give 2 doses MMR vaccine at 12-15 months, and 4-6 years
- Post-exposure prophylaxis
  - Susceptible contacts of child with measles give IM immune globulin



# Rubella

(German measles)

# Rubella

- Etiology

- Rubella virus

- RNA virus of **rubivirus** genus Family: Parvoviridae

- Humans only host

# Transmission

- **Airborne** – by droplets of respiratory secretions
- **Trans-placental** – to fetus causing congenital rubella syndrome
- Humans only host
- Peak age
  - Where no vaccination 5 – 14 years
  - Where routine vaccination - adolescents and adults

# Clinical findings – acquired rubella

Most cases **subclinical**, so rarely have history of contact with case of rubella

Where clinically evident illness occurs, 3 clinical stages:

- Incubation period 14 - 21 days
- Prodrome – 2-3 days
  - Catarrhal symptoms
  - **Tender lymphadenopathy** – retroauricular, posterior cervical and post-occipital (characteristic)

# Clinical findings – acquired rubella

- ~~Enanthem~~ Exanthem
  - Maculopapular rash – starts face spreads to trunk and extremities, coalesces, fades quickly in similar fashion
  - +/- fever
  - +/- conjunctivitis



# Congenital Rubella Syndrome

Occurs if mother infected during **first trimester** (80% infants affected). May have any of the following:

- Growth retardation
- Cardiac anomalies (PDA, VSD)
- Ocular anomalies – cataract, microphthalmia, glaucoma, retinitis
- Deafness
- Chronic encephalitis
- Hematologic – thrombocytopenia, lymphopenia
- Hepatitis

- Take a history of any fever with rashes during the first trimester of pregnancy

# Rubella



# Complications and Sequelae

- Arthralgia and arthritis – is transient
- Encephalitis
- Acquired rubella – sequelae rare
- Congenital rubella – sequelae as listed above

# Laboratory Findings

- FBC – Leucopenia, +/- thrombocytopenia (esp congenital), hemolytic anemia
- High (rising) rubella serum IgM antibody
- Abnormal liver function tests
- Congenital rubella – low platelets, bone metaphysial longitudinal lucencies
- Viral isolation from throat swabs and urine samples
  - PCR
  - viral Culture

# Treatment & Prevention

- Treatment - supportive

- Antipyretics – paracetamol

MMR

9th and 16th months

4 - 6 years

- Prevention

- Immunization – live attenuated vaccine, given as **MMR** at 12-15 months, repeated at 4-6 years and/or 10 years
- Exposed pregnant woman - **immunoglobulin**



# Mumps

# Mumps

## Etiology:

- Mumps virus
- RNA virus - genus **Paramyxovirus**
- One serotype

## Epidemiology:

- Endemic where no vaccination
- Now due to immunization, **rare in developed countries**

# Transmission

- Virus present in **saliva** and urine
- Transmitted by direct contact, air-droplets, contact with infective urine
- Peak incidence 5 – 9 years

Men are commonly affected



# Clinical Presentation

+/- History of contact with case of mumps

Incubation period 14 - 21 days

Varying presentations:

- 30-40% cases subclinical
- Salivary gland disease (~ 7 days)
  - Enlarged tender parotids (uni- or bilateral)
  - Fever
  - Facial lymphoedema
  - Ear protrudes

# Mumps



# Clinical Presentation

- Meningo-encephalitis
  - Aseptic meningitis – mild headache in most, 10% develop clinical meningitis or encephalitis
- Orchitis, oophoritis
  - Fever
  - Local tenderness and swelling
  - Usually unilateral
- Pancreatitis
  - Abdominal pain

# Complications and Sequelae

- Encephalitis – nerve deafness (high tone)
- Orchitis – sterility (rare)



# Laboratory Findings

- Leucocyte count normal
- Viral culture of saliva, throat, urine or spinal fluid
- Serological – ELISA test

# Treatment & Prevention

- Therapy mainly supportive - analgesics
- Prevention
  - Immunization – live attenuated vaccine MMR
  - 2 doses MMR vaccine at 12-15 months, and 4-6 years



That's all!