Rubella

Key facts:-

-Rubella is a contagious, generally mild viral infection that occurs most often in children and young adults.

-Rubella infection in pregnant women may cause fetal death or congenital defects known as congenital rubella syndrome (CRS).

-Worldwide, over 100 000 babies are born with CRS every year.

-There is no specific treatment for rubella but the disease is preventable by vaccination.

Identification:-

-Mild febrile viral disease

-with diffuse rash.

-Children usually present few or no constitutional symptoms.

-In adults may experience of low grade fever , headache , malaise, mild corysa, & conjunctivitis , lymphadenopathy(ccic CF & precedes the rash by 5-10 days)

-Up to half of infections occur without recognized rash .

-Leukppenia is common

-thrombocytopenea can occur ,

-arthralgia , arthritis.

-Encephalitis & thrombocytopenia (rare complication in children , encephalitis occur more in adults)

Case classification:-

1-Suspect: any generalized maculopapular rash with fever, lymphadenopathy

2-Probable: a case that meets the clinical case definition, has no or noncontributory serological or virological testing, and is not epidemiologically linked to a laboratory confirmed case.

3-Confirmed: a case that is laboratory confirmed (isolation of rubella virus or significant rise in rubella antibody level by standard serologic assay, or positive serologic test for rubella IgM antibody) or that meets the clinical case definition and is epidemiologically linked to a laboratory - confirmed case.

.Rubella is important because:-

. Of its ability to produce anomalies in the developing fetus

Congenital rubella syndrome (CRS) occurs in up90% of infants born to women who are . infected with rubella during the 1st trimester of pregnancy

. Infected fetus are at risk of IUD , spontaneous abortion , congenital malformation

Congenital rubella syndrome:-

-Children with CRS can suffer hearing impairments, eye and heart defects and other lifelong disabilities, including autism, diabetes mellitus and thyroid dysfunction – many of which require costly therapy, surgeries and other expensive care.

-The highest risk of CRS is in countries where women of childbearing age do not have immunity to the disease (either through vaccination or from having had rubella). Before the introduction of the vaccine, up to 4 babies in every 1000 live births were born with CRS.

-Large-scale rubella vaccination during the past decade has practically eliminated rubella and CRS in many developed and in some developing countries.

-In April 2015, the WHO Region of the Americas became the first in the world to be declared free of endemic transmission of rubella.

-CRS rates are highest in the WHO African and South-East Asian regions where vaccine coverage is lowest.

-The syndrome (CRS) follows intrauterine infection by Rubella virus and comprises cardiac, cerebral, ophthalmic and auditory defects. It may also cause prematurity, low .birth weight, and neonatal thrombocytopenia, anaemia

-The risk of major defects or organogenesis is highest for infection in the first trimester. Many mothers who contract rubella within the first trimester either have a miscarriage or a still born baby. If the baby survives the infection, it can be born with severe heart disorders (Patent ductus arteriosus being the most common), blindness, deafness, or other life threatening organ disorders. The skin manifestations are called "blueberry

muffin lesions." For these reasons, Rubella is included on the ***TORCH*** complex of perinatal infections

the with ***TORCH*** complex was originally considered to consist of four conditions The still used in many modern The four-term form is ."Toxoplasma" referring to "TO" .is sometimes used in these contexts "***ToRCH***" and the capitalization references

spelled out as follows and the acronym is ‹"other" is redefined as "O" the ‹Alternatively

Toxoplasma gondii / Toxoplasmosis – T

Other infections (see below) –

Rubella – R

Cytomegalovirus – C

Herpes simplex virus – H

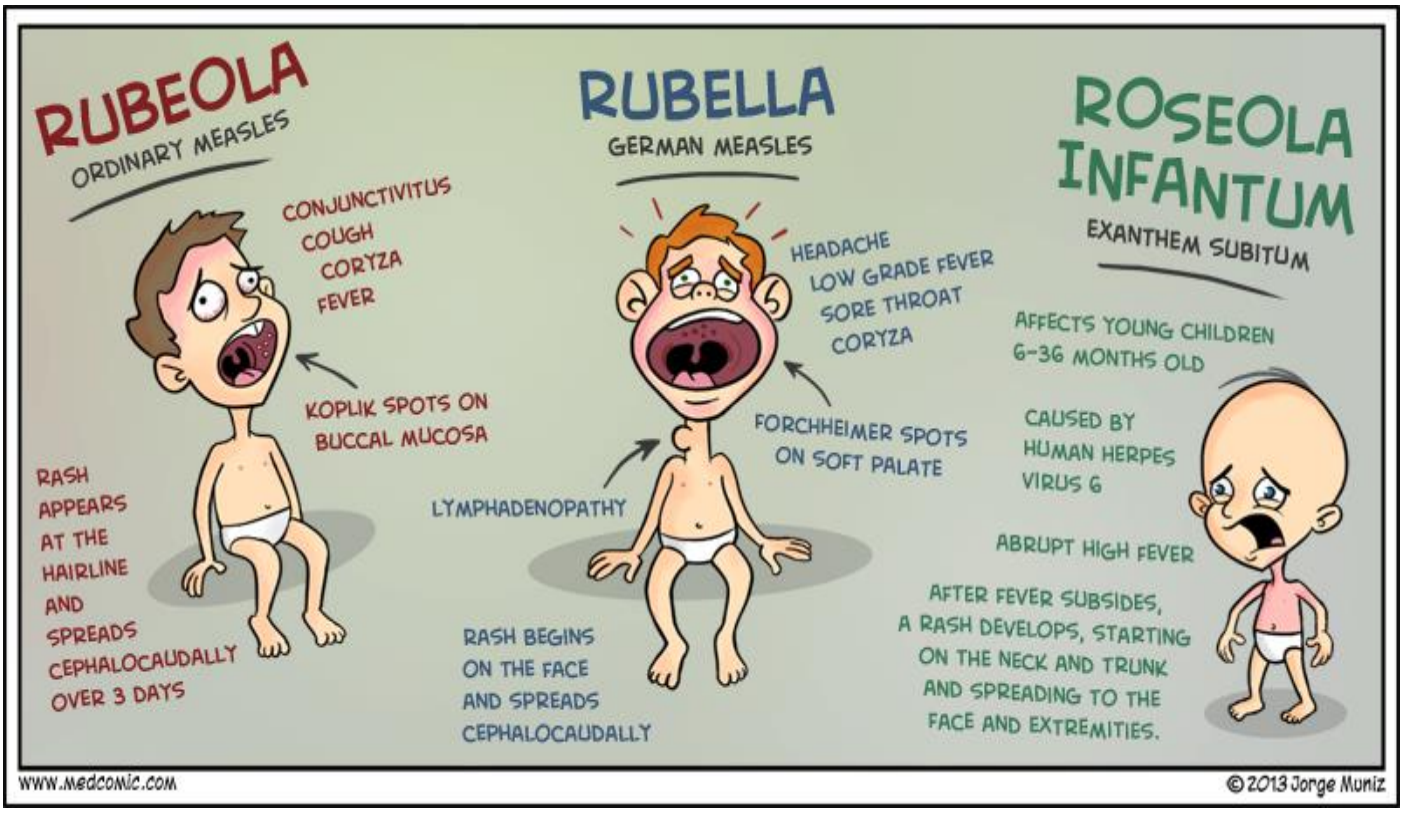
Varicella-Zoster ‹Syphilis ‹Coxsackievirus are O included under "other agents" The Parvovirus B and ‹HIV ‹Virus

other agents" also be included among may **Hepatitis B**

TORCHES for:

HErpes ‹**C**ytomegalovirus ‹**R**ubella ‹**TO**xoplasmosis
.**S**yphilis ‹simplex

Differentiation of rubella:-



Diagnosis : -

-clinical dx

-lab : significant rise in specific antibody between acute & convalescent phase by ELISA

OR by presence of rubella specific IgM indicating recent infection

- Virus may be isolated from the pharynx 1 wk before & up to 2 wk after onset of rash

-. Blood , urine , or stool specimens may yield virus

-Virus may be shed from the throat and urine for as long as year

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Infectious agent : Rubella virus (family Togaviridae)

: Occurrence

-Worldwide, usually endemic except in remote & isolated communities that have
. epidemics every 10-15 years

.**-** it is prevalent in winter & spring

-***Reservoir***: humans

-Mode of transmission

.1-Contact with nasopharyngeal secretions of infected person

.2-Infection by droplet spread or direct contact with patients

3-Infants with CRS shed large quantities of virus in their pharyngeal secretions and
.urine and serve as a source of infection to their contacts

.***Incubation period :*** from 14-17 days with range 0f 14-21 days

Period of communicability : for about 1 wk before and at least 5 days after onset of rash

Susceptibility & resistance:-

.**-** Suscp. Is general after loss of transplacentally acquired maternal antibodies

-Active immunity is acquired by natural infection or by immunization , it is usually
. permanent or lifelong

Methods of control:-

-prevent Rubella control is needed primarily to
defect in the offspring of women who infected during pregnancy

A- PREVENTIVE MEASURES:-

1-educate the general public on mode of transmission & need for rubella immunization

2-live attenuated rubella virus vaccineNinety-five percent of those who receive the MMR or rubella vaccine at one year of age or older are immune after the first dose. Immunity is lifelong

-Immunization of all children is recommended at 12-15 months of age part of MMR , . with 2nd dose of MMR at school entry or at adolescence

-Rubella vaccines are available either in monovalent formulation (vaccine directed at only one pathogen) or more commonly in combinations with other vaccines such as with vaccines against measles (MR), measles and mumps (MMR), or measles, mumps and varicella (MMRV)

Vaccine is recommended for:-

.non pregnant females without contraindication

Susceptible young adults who have contact with young children

*medical personnel should be immune to rubella , particularly those who are contact with patients in prenatal clinics

Vaccine contraindications:-

* . immunodeficiency or on immunsuppressive therapy

*women known to be pregnant or who are planning to get pregnant in the next 3 * In some countries routine immunization is months

given to girls between 11&13 years of age with or without prier antibody . testing

3-in case of natural infection early in pregnancy ,abortion should be considered because of

. high risk of damage to the fetus

4-IG given after exposure early in pregnancy may not prevent infection or viremia , but it modify or suppress symptoms. It is sometimes given in huge doses (20 ml) to a susceptible pregnant women exposed to the disease who would not consider .abortion under any circumstances , but its value has not been established

B-Control of patient , contact and immediate environment:-

1-report to local health authority: all cases of rubella should be reported , report is obligatory

2-isolation: in hospitals & institutions, patients suspected of having rubella should be managed under contact isolation percussions & placed in a private room to prevent exposure of non-immune pregnant women

.Exclude children from school & adults from work for 7 days after onset of rash

3-concurrent disinfection: none

4-quarantine: none

5-immunization of contact: immunization , if not contraindicated, will not .necessary prevent infection or illness

*Passive immunization with IG is not indicated

6-investigation of contact & source of infection: identify pregnant female . contacts, especially those in the 1st trimester

7-specific treatment: none

C- epidemic measures:-

1-prompt reporting of all confirmed & suspected cases & immunization of all .suspected contacts are needed for outbreak control

2-the medical community & general public should be informed about rubella .epidemics in order to identify & protect suspected pregnant women

WHO response:-

WHO recommends that all countries that have not yet introduced rubella vaccine should consider doing so using existing, well-established measles immunization programmes. To-date, three WHO Regions have established goals to eliminate this preventable cause .of birth defects

By the end of 2015

.Reduce global measles deaths by at least 95% compared with 2000 levels

Achieve regional measles and rubella/congenital rubella syndrome (CRS) elimination .goals

By the end of 2020

.Achieve measles and rubella elimination in at least 5 WHO regions

The strategy focuses on the implementation of 5 core components:-

1-achieve and maintain high vaccination coverage with 2 doses of measles- and rubella-ؼcontaining vaccines

2-monitor the disease using effective surveillance, and evaluate programmatic efforts to ؼensure progress and the positive impact of vaccination activities

3-develop and maintain outbreak preparedness, rapid response to outbreaks and the ؛effective treatment of cases

4-؛communicate and engage to build public confidence and demand for immunization

5-perform the research and development needed to support cost-effective action and - improve vaccination and diagnostic tools

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***MUMPS*:-**

-Acute viral disease characterized by:-

-Fever ,swelling and tenderness of one or more salivary glands, usually parotid & some time sublingual or submaxillary glands

-Mumps is a contagious disease caused by a virus. and can be protect against mumps .with vaccination

:The most common symptoms include:-

-Fever

-Headache

-Muscle aches

-Tiredness

-Loss of appetite

-Swollen and tender salivary glands under the ears on one or both sides (parotitis)

-Symptoms typically appear 16-18 days after infection, but this period can range from .12-25 days after infection

-Some people who get mumps have very mild or no symptoms, and often they do not .know they have the disease

.-Most people with mumps recover completely in a few weeks

Transmission of Mumps:-

-Mumps is a contagious disease caused by a virus. It spreads through saliva or mucus from the mouth, nose, or throat. An infected person can spread the virus by

‹-coughing, sneezing, or talking

-sharing items, such as cups or eating utensils, with others, and

.-touching objects or surfaces with unwashed hands that are then touched by others

-Mumps likely spreads before the salivary glands begin to swell and up to five days after .the swelling begins

*-mastitis , occur in up to 30% of female older than 15 years

-sterility, rare*

Incubation period

16-18 days (Range: 14-25 days).

Period of communicability

Virus has been isolated from saliva (7 days before to 9 days after the onset of parotitis) and from urine (6 days before to 15 days after the onset of parotitis). Maximum infectiousness occurs between 2 days before to 4 days after onset of illness. Inapparent infections can be communicable.

Known complications of mumps include:-

-Mumps can occasionally cause complications, especially in adults.

Complications include:

1-inflammation of the testicles (orchitis) in males who have reached puberty; rarely does this lead to fertility problems

2-inflammation of the brain (encephalitis)

3-inflammation of the tissue covering the brain and spinal cord (meningitis)

4-inflammation of the ovaries (oophoritis) and/or breast tissue (mastitis)

5-deafness

-Mumps infection during the first trimester of pregnancy is associated with a high (25%) incidence of spontaneous abortion, but there is no firm evidence that mumps during pregnancy causes congenital malformations

Acute mumps infection confirm by :

-significant rise in IgG , IgM antibodies

-Positive mumps viral cultures

Methods of control

: A-preventive measures

1-. public education to encourage mumps immunization

2-live attenuated mumps V irus vaccine (MMR) . More than 95% of children develop . immunity that is long – lasting & may be lifelong

-Vaccine may be taken any time after 1 year of age , preferably as MMR at 12-15 months .of age. 2nd dose recommended at 4-6 years

-However, in an accelerated MMR schedule , or a catch –up opportunity , the second . dose may be given as soon as 1 month after the first dose

-Special effort should be made to immunize before puberty all persons with no definite . history of mumps or mumps immunization

Vaccine is contraindication in:-

- immunosuppressed

-. pregnant females or females trying to get pregnant in the next 3 months*

B- **Control of patient , contact and immediate environment**

1-selectively reportable

2-isolation : resp isolation & private room for 9 days from onset of swelling to, less if swelling is subside, exclusion from school & workplace until 9 days after onset of .parotitis if susceptible contacts(those not immunized) are present

3-.concurrent disinfection : of articles soiled with nose & throat secretions

4-Quarantine : exclusion of susceptible from school or the workplace from the 12th . through the 25th day after exposure if other susceptible are present

5-immunization of contact : immunization protected against infection from subsequent - . exposure, IG is not effective & not recommended

6-investigation of contact & source of infection: susceptible contact should be . immunized

7-specific treatment : none

C-Epidemic measures:

-Immunize susceptible, especially those at risk of exposure

-serologic screening to identify susceptible is impractical & un necessary, since there is * no risk in immunizing those who are already immune