

- **L6 Pediatric Lecture**

- **Mumps.**
- **Tetanus Neonatorum**

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**Learning objectives: by the end of this lecture the you should know**

- What is mumps, what cause it?.
- How does the child acquire the disease?
- How does the patient presented to you?
- What are the complications that the pt. may develop?
- How can you manage the pts &how can u prevent mumps?
- What is tetanus nenatorum, what cause it?.
- How does the child acquire the disease? .
- How dose the patient presented to you?
- What are the complications that the pt. may develop?
- How can you manage the pts &how can u prevent tetanus?

## **Mumps**

- Mumps is an acute viral infection caused by RNA virus of paramyxoviridae family.
- it is endemic in most unvaccinated population.

### **Epidemiology of mumps**

Mumps is spread from person to person by respiratory droplets, contaminated fomites and possibly by urine.

**Age :** Before vaccination 5-9 yrs old children, now young adults producing outbreak in colleges

- Epidemics occurs at all seasons but are slightly more frequent in late winter and spring.
- The period of maximum infectiousness is **1–2 days before to 5 days after parotid swelling**

### **Clinical features of Mumps:**

- Incubation periods range from 5days, peak at 16-18 days.
- The typical patient presents with a prodrome lasting 1-2 days and consisting of fever, headache, vomiting, and achiness. Parotitis then appears and may be unilateral initially but becomes bilateral in approximately 70% of cases.
- 30-40% of infection are subclinical.
- Mumps parotitis:** The pt usually have pain and swelling of the parotid gland 1st fill the space between the posterior border of mandible and mastoid then extend downward and forward and may be preceded or accompanied by ear pain on the ipsilateral side and may proceed rapidly reaching a maximum within few hrs , although it usually peak in 1-3 days and slowly subside within 3-7 days but occasionally lasts longer.
- As swelling progresses, the angle of the jaw is obscured and the ear lobe may be lifted upward and outward, The swollen area is tender and painful , the pain being elicited by tasting sour liquids such as lemon juice or vinegar the parotid swelling is usually accompanied by low grade fever. Fever and other systemic symptoms resolve in 3-5 days.
- A morbilliform rash is rarely seen
- Submandibular salivary glands may also be involved

### **Diagnosis of mumps:-**

- ❖ When mumps was highly prevalent, the diagnosis is clinical.
- ❖ The lab finding includes:-
  - Elevation of S. amylase(return to normal within 2 wk.)
  - Leucopenia with relative lymphocytosis.
  - Confirmation :- detection of viral antigen by direct immunofluorescence, or identification of nucleic acid by reverse transcriptase PCR.
- viral culture from upper respiratory secretion ,CSF or urine during the acute illness

### **Complication of mumps:-**

- Meningoencephalitis is most frequent in childhood especially in male. (in 10-30% of cases).
- Orchitis& epididymitis :in pre-pubescent boys is extremely rare, but after puberty, orchitis occurs in 30-40% of males. Infertility is rare even with bilateral orchitis.
- Oophoritis is uncommon in post pubertal females but may cause severe pain and may be confused with appendicitis when located on the right side.
- Others: pancreatitis, myocarditis, arthritis, thyroiditis, oophoritis.
- The hearing loss can be transient, with permanent unilateral hearing loss in 1 in 20,000 and bilateral loss occurring rarely.

**Treatment Of Mumps:-** There is no specific antiviral therapy.

The treatment is entirely supportive, antipyretic for fever, bed rest as guided by the pt needs, the diet should be adjusted to the pt abilities to chew.

orchitis should be treated by local support and bed rest.

Arthritis can be treated by 2 wk course of NSAID or steroid.

**Prognosis:** is nearly always excellent, even when the disease is complicated by encephalitis, although fatal cases from CNS involvement or myocarditis have been reported

### **Prevention of mumps**

- Patients isolation.
- Immunization with the live mumps vaccine is the primary mode of prevention It is given as part of the MMR 2-dose vaccine schedule, at 12-15 mo of age for the 1st dose and 4-6 yr of age for the 2nd dose.
- vaccine effectiveness after 2 doses is 88%

## • Tetanus

Historically called **lockjaw**, is an acute, spastic paralytic illness caused by the neurotoxin produced by *Clostridium tetani*, a motile, gram-positive, spore-forming obligate anaerobe whose natural habitat worldwide is soil, dust, and the alimentary tracts of various animals.

- **Tetanus neonatorum:** The Tetanus neonatorum is a form of generalized tetanus, typically manifests within 3–12 days of birth as progressive difficulty in feeding (sucking and swallowing), associated hunger, and crying. Paralysis or diminished movement, stiffness and rigidity to the touch, and spasms, +/- opisthotonos, are characteristic.
- **Opisthotonus :-** is an equilibrium position that results from unrelenting total contraction of opposing muscles, all of which display the typical **boardlike rigidity** of tetanus. the patient may assume an arched posture of extreme hyper-extension of the body, with the head and the heels bent backward and the body bowed forward with only the back of the head and the heels touching the supporting surface.
- The umbilical stump may hold remnants of dirt, dung, clotted blood, or serum, or it may appear relatively benign. Because tetanus toxin does not affect sensory nerves or cortical function, the patient unfortunately remains conscious, in extreme pain
- These seizures are characterized by sudden, severe tonic contractions of the muscles, with fist clenching, flexion, and adduction of the arms and hyperextension of the legs. Without treatment, the seizures range from a few seconds to a few minutes in length.

**DIAGNOSIS :** The picture of tetanus is one of the most dramatic in medicine, and the diagnosis may be established clinically. The typical setting is an unimmunized patient (and/or mother) who was injured or born within the preceding 2 wk, who presents with trismus, other rigid muscles, and a clear sensorium.

- **Lab finding:-** A peripheral leukocytosis (secondary bacterial infection, stress of muscle contraction).
- The cerebrospinal fluid is normal.
- Neither the EEG nor the EMG shows a characteristic pattern.
- *C. tetani* is not always visible on Gram stain of wound material, and it is isolated in only about **one third** of cases.

**The spatula test** is a simple diagnostic bedside test that involves touching the oropharynx with a spatula or tongue blade. Normally this maneuver will elicit a gag reflex. If tetanus is present, patients develop a reflex spasm of the masseter muscles and bite the spatula (positive test). This bedside diagnostic maneuver is said to have a high sensitivity and specificity.

**Differential diagnosis:**

- **Rabies.**
- **Hypocalcemia.**
- **In neonates: neonatal sepsis.**

### • Aims of Management:

1. Eradication of *C. Tetani*.
2. Neutralization of all accessible tetanus toxin.
3. Control of seizures and respiration, palliation and provision of meticulous supportive care.
4. Prevention of recurrences.

## TREATMENT:

1-Surgical wound excision and debridement are often needed to remove the foreign body or devitalized tissue that created anaerobic growth conditions. Surgery should be performed promptly after administration of **human tetanus immunoglobulin (TIG & antibiotics)**. Excision of the umbilical stump in neonatal tetanus is no longer recommended

2- Human tetanus immunoglobulin **TIG** :- should be given as soon as possible before the toxin can bind at distant muscle groups ,because Once tetanus toxin has begun its axonal ascent to the spinal cord, it cannot be neutralized by TIG.

Dose: Some experts recommend a single intramuscular injection of 500 units of TIG to neutralize systemic tetanus toxin, but total doses as high as 3,000-6,000 U are also recommended

- **If TIG is unavailable**, use of human IVIg may be necessary.
- **Another alternative** : Tetanus antitoxin: The usual dose of TAT is 50,000-100,000 units, with half given intramuscularly and half intravenously

3- **ANTIBIOTICS**: Oral (or intravenous) **Metronidazole** (30 mg/kg/day, given at 6 hr intervals; maximum dose, 4 g/day) is currently considered the antibiotic of choice. Alternative treatment: **Penicillin G** (100,000 U/kg/day divided every 4–6 hr IV).

**Antimicrobial therapy for a total duration of 7-10 days is recommended.**

## 4-Management of complication:

### • **COMPLICATION:**

- Aspiration of secretions & pneumonia may occurs .
- The seizures may result in lacerations of the mouth or tongue, in intramuscular hematomas, rhabdomyolysis with myoglobinuria and renal failure, or in long bone or spinal fractures.
- Venous thrombosis, pulmonary embolism, are constant hazards .
- Excessive use of muscle relaxants may produce iatrogenic apnea
- Anticonvulsant, muscle relaxants and meticulous supportive care in a quiet, dark, secluded setting is most desirable. Because tetanic spasms may be triggered by minor stimuli, the patient should be sedated and protected from all unnecessary sounds, sights, and touch; and all therapeutic and other manipulations must be carefully scheduled and coordinated.
- Endotracheal intubation may be needed to prevent aspiration of secretions.
  - **Prognosis:** Recovery in tetanus occurs through regeneration of synapses within the spinal cord that results in restoration of muscle relaxation, **The most important factor that influences outcome is the quality of supportive care.**

## PREVENTION OF TETANUS neonatorum

- WHO is engaged currently in a global elimination of neonatal tetanus campaign through maternal immunization with tetanus toxoid, all pregnant women should receive 1dose of reduced diphtheria and pertussis toxoids (Tdap) during each pregnancy, preferably at 27-36 week of gestation.

## References:

- Nelson Textbook of Pediatrics , 21 edition .
- Nelson essentials Textbook of Pediatrics , 7<sup>th</sup> edition.
- Illustrated textbook of pediatrics.5<sup>th</sup> edition.