



## Case study on recurrent meningitis with otitis media in hiv postive child.

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Received: 06 Jan 2019; Revised: 06 Feb 2019; Accepted: 15 Mar 2019

### Abstract

Bacterial meningitis is a neurologic crisis. Immunization against normal microbes has diminished the weight of sickness. Early conclusion and fast commencement of empiric antimicrobial and adjunctive treatment are fundamental. Treatment ought to be started when blood cultures have been acquired, going before any imaging studies. Clinical signs of bacterial meningitis incorporate fever, migraine, meningismus, and a modified degree of cognizance yet signs might be scant in youngsters, in the old, and in meningococcal sickness. In this case study the child with HIV positive had a recurrent headaches and ear pain where the lab investigations shows the child has a streptococcal infection with middle ear inflammation.

**Keywords:** Meningococcal, Meningitis, Immunization.

### Introduction

Streptococcal meningitis is an intense, purulent irritation of the layers encompassing the brain and spinal cord caused by microbes from the Streptococci species.

Meningitis is a disease and aggravation of the liquid and layers encompassing the cerebrum and spinal cord. These films are called meninges.

The inflammation from meningitis regularly sets off side effects like cerebral pain, fever and a stiff neck

Most instances of meningitis in the US are brought about by a viral disease. Be that as it may, microscopic organisms, parasites and growths additionally can cause it. A few instances of meningitis improve without treatment in

half a month. Others can cause death and require immediate antibiotic treatment.

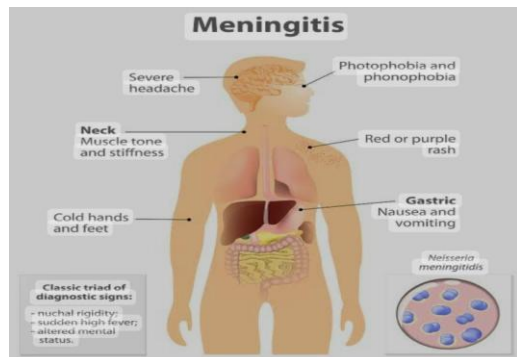
### Symptoms

- Sudden high fever.
- Stiff neck.
- Severe headache.
- Nausea or vomiting.
- Confusion or trouble concentrating.
- Seizures.
- Sleepiness or trouble waking.
- Sensitivity to light.
- No appetite or thirst.
- Skin rash in some cases, such as in meningococcal meningitis.

### Various causes of meningitis

#### Bacterial meningitis

Microbes that enter the circulatory system and travel to the brain and spinal cord cause bacterial meningitis. Yet, bacterial meningitis likewise can happen when microscopic organisms straightforwardly attack the meninges. This might be brought about by an ear or sinus contamination, a skull fracture, or — once in a while — a few medical procedures.



### **A few types of microscopic organisms can cause bacterial meningitis, most commonly:**

- **Streptococcus pneumoniae:** The bacterium is the most common cause of bacterial meningitis in babies, children and grown-ups in the US. It all the more regularly causes pneumonia or ear or sinus contaminations. An immunization can assist with preventing this disease.
- **Neisseria meningitidis:** This bacterium causes bacterial meningitis called meningococcal meningitis. These microbes regularly cause an upper respiratory disease however can cause meningococcal meningitis when they enter the circulation system. This is a profoundly infectious contamination that influences fundamentally teens and youthful grown-ups. It might cause nearby plagues in school dorms, life experience schools and army installations. An immunization can assist with forestalling disease. Regardless of whether immunized, anyone who has been in close contact with an individual with meningococcal meningitis ought to get an oral anti-microbial to forestall the sickness.
- **Haemophilic influenza:** Haemophilic influenza type b (Hib) bacterium was once the main source of bacterial meningitis in youngsters. Be that as it may, new Hib immunizations have enormously decreased the quantity of instances of this kind of meningitis.
- **Listeria monocytogenes:** These microscopic organisms can be tracked down in unpasteurized cheeses, franks and lunchmeats. Individuals who are pregnant, babies, more seasoned grown-ups and individuals with debilitated resistant frameworks are generally defenceless. During pregnancy, listeria can cross the placenta. Diseases in late pregnancy might be deadly to the child.

### **Viral meningitis**

Viral meningitis is generally gentle and frequently clears all alone. Most cases in the US are brought about by a gathering of infections known as enteroviruses. They're most normal in pre-fall and late-summer. Infections, for example, herpes simplex infection, HIV, mumps infection, West Nile infection and others additionally can cause viral meningitis.

### **Chronic meningitis**

Chronic meningitis — one that is long lasting — can be brought about by sluggish developing organic entities like parasites and Mycobacterium tuberculosis. They attack the layers and liquid encompassing the cerebrum. Chronic

meningitis develops over fourteen days or more. Side effects are like intense meningitis, which is an unexpected, new case. They incorporate cerebral pain, fever, heaving and mental shadiness.

### **Fungal meningitis**

Fungal meningitis isn't normal in the US. It might imitate intense bacterial meningitis. It's often contacted by taking in parasitic spores that might be tracked down in soil, rotting wood and bird droppings.

Fungal meningitis isn't spread from one individual to another. Cryptococcal meningitis is a typical parasitic type of the sickness. It influences individuals with weakened immune systems, for example, AIDS. It can cause demise on the off chance that not treated with an antifungal medication. Indeed, even with treatment, parasitic meningitis might return.

### **Parasitic meningitis**

Parasites can cause an interesting sort of meningitis called eosinophilic meningitis. Parasitic meningitis likewise can be brought about by a tapeworm disease in the cerebrum or cerebral malaria. Amoebic meningitis is an uncommon kind that is some of the time contracted through swimming in fresh water and can immediately become perilous.

The fundamental parasites that cause meningitis commonly taint creatures. Individuals are generally tainted by eating food sources sullied with these parasites. Parasitic meningitis isn't spread between individuals.

### **Case Study**

A 7 year old girl was brought in by her mother with a three Day history of headache, pain in the left ear, fever and Vomiting. Her mother was concerned because the last time she had been sick like this she had to be admitted to hospital.

### **Past Medical History**

Child was diagnosed as being HIV positive four years ago at age 4 years and has been on HAART since diagnosis.

### **Past Medication History**

- Child has had six previous hospital admissions for Streptococcus pneumonia meningitis starting from
- Age 3 years and occurring at approximately six Monthly intervals, with the most recent admission Having been eight months prior to this Presentation.
- On each admission Streptococcus pneumonia was isolated from cerebrospinal fluid (CSF) sensitive to ceftriaxone. Serotype testing was not available.
- The child was treated with 10 days of IV Ceftriaxone and on each occasion CSF was cleared of infection.
- At discharge on all admissions CSF was clear with Resolution of meningitis.

- On her third admission at age four she was found to be HIV positive and started on HAART.
- No history of seizures, head trauma or loss of consciousness.

### **Family History**

- Father died two years previously with pneumonia.
- Mother is HIV positive and has been on HAART since 12 months.

### **Lab Investigations**

The patient vitals are normal the lab investigations interpret that increased WBC cells ( $19 \times 10^9/L$ ), elevated CSF cell count, lymphocytes (45%) and IgG antibodies also elevated (12.8) c3 and c4 count also elevated and the patient tested positive for HIV Elisa also represents sensitivity to drug ceftriaxone.

Based on physical examination the vital are normal and the s1, s2 sounds of the heart are also normal but on examining the ENT the left ear the inflamed tympanic membrane and accompanying hearing loss. On accessing neurological examination the patient has neck stiffness.

### **DISCUSSION**

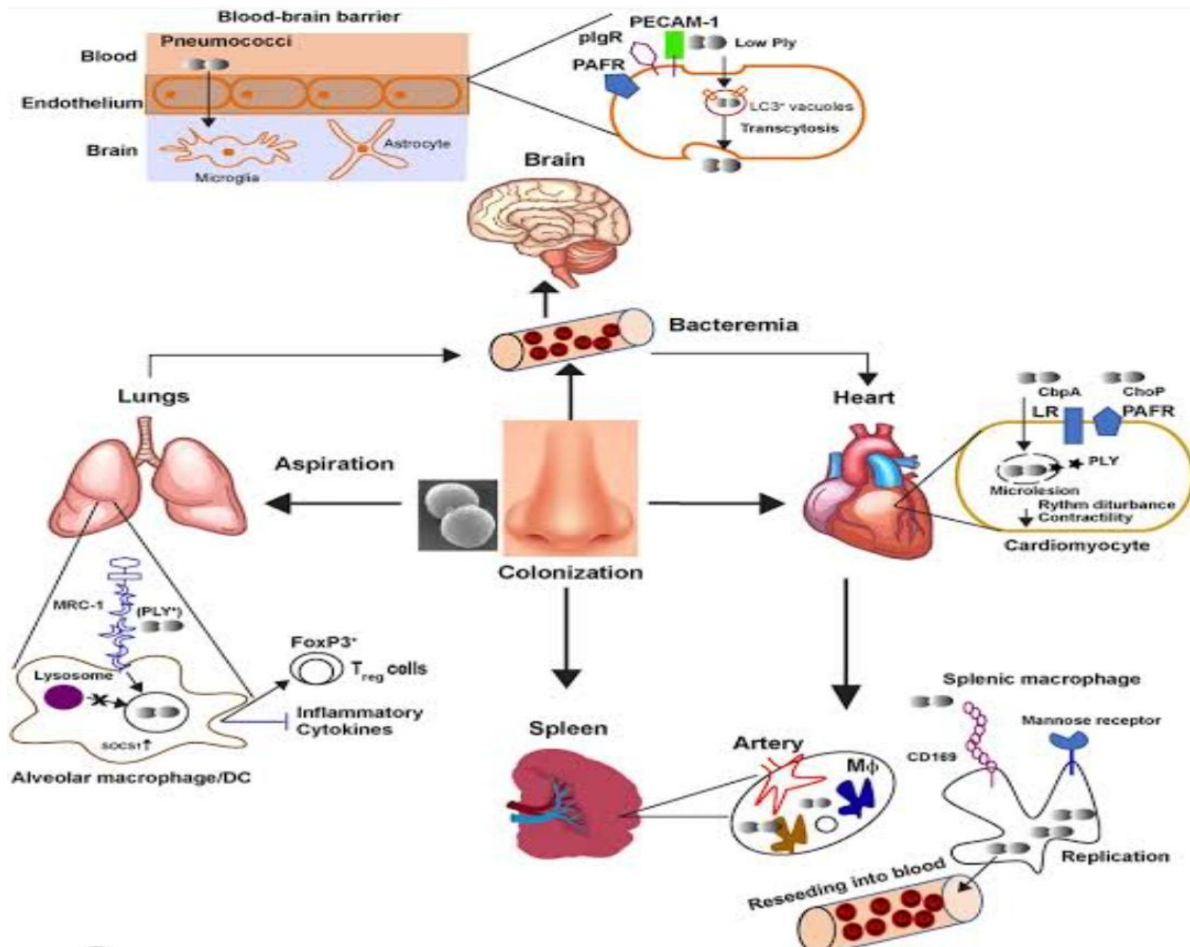
The girl was determined to have Streptococcus pneumonia (pneumococcus) contamination. S. pneumonia is a gram-positive, encapsulated bacterium, and a significant and normally experienced bacterial microbe in people. It is many times found as a typical commensal in the nasopharynx of solid grown-ups and Child. It really does anyway can possibly turn into pathogenic. Case casualty rates related with intrusive sickness shift generally however can approach half and are most prominent in patients who foster meningitis. The bacterium Does as such by getting away from nearby host safeguards and phagocytic Components, and enters the CSF either through choroid Plexus/subarachnoid space cultivating from bacteraemia or through Direct expansion from sinusitis, otitis media or mastoiditis. By and by, it is the most considered normal bacterial reason for Meningitis, representing 47% of cases.

A lumbar puncture for CSF assessment is urgently warranted in any person in whom meningitis is clinically suspected. Bacterial meningitis is a neurological crisis that is related with significant morbidity and mortality. The initiation of empiric antibacterial, antiviral or antifungal Treatment is the fundamental for improved result. This is normally founded on the known inclining factors and additionally starting CSF Gram-stain results. Huge defers in organizing antimicrobial treatment in people with bacterial meningitis could prompt huge morbidity and mortality. The selected antibiotic should attain sufficient levels in the CSF.

In our clinical case, on all her admissions a lumbar puncture was performed and Streptococcus pneumonia was separated. On each event the microscopic organisms were sensitive to ceftriaxone a third generation cephalosporin. The patient was treated with intravenous ceftriaxone until the infection was cleared from the CSF. This typically required 10 days of treatment however the most recent admission required 21 days of IV treatment before the infection was cleared. On this current admission the child has again been treated with IV ceftriaxone. Furthermore broad imaging of the sinuses, mastoids, skull and cerebrum were led. The imaging particularly CT of the mastoids showed contamination in the left mastoid, the typically air-filled honeycomb like appearance of the cavities were obliterated. In view of these discoveries and the patients history of repetitive meningitis the child was scheduled for a left sided mastoidectomy as this was believed to be the source of direct inoculation of Streptococcus pneumonia into the CSF.

Prophylactic antibiotics were prescribed until the time of medical procedure to prevent any further repetitive diseases.

The child had not received the Heptavalent pneumococcal form immunization (PCV7 antibody) Since it was not piece of the immunization plan when she was a new born child and baby, there would be no extra benefit in giving it to her at this stage. The reason for this is that her immune system is currently functioning well which implies that she has proactively framed antibodies to streptococcus pneumonia. The justification for her repeat of disease was not because of an unfortunate insusceptible reaction but instead to a direct vaccination of microscopic organisms into the CSF by means of otitis media and Mastoiditis.



### Conclusion

After the mastoidectomy the child has no recurrent ear infections. She is on HAART course and viral load has remain undetectable but CD4 count has rising slowly. However audiometry testing has showed 30% hearing loss in left ear than right ear.

### Ethical Considerations

Ethical support was received from King George hospital (KGH), Visakhapatnam, Andhra Pradesh.

### Acknowledgement

We acknowledge the continuous support from principal of Avanthi Institute of Pharmaceutical Sciences Dr. M.B.V. Raju for the successful completion of study.

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