



Preventing Complications of Pyogenic Odontoid Osteomyelitis: Early Diagnosis and Treatment of Sinus Thrombosis

Belle Polli*

Department of Cardiology, Hospital of Annecy, Annecy, France

DESCRIPTION

Pyogenic Odontoid Osteomyelitis (POO) is a rare and potentially life-threatening condition that affects the odontoid process of the axis vertebra. The odontoid process is a bony projection that extends from the second cervical vertebra and serves as a pivot for the head. POO is a type of osteomyelitis, which is an infection of the bone and bone marrow. When POO is accompanied by sinus thrombosis, the condition becomes even more severe and requires prompt diagnosis and treatment.

Causes

POO with sinus thrombosis is caused by the invasion of bacteria into the odontoid process. Bacteria can enter the odontoid process through several routes, including direct spread from a nearby infection, hematogenous spread from a distant site of infection, or iatrogenic spread from a surgical procedure. The most common bacterial organisms associated with POO are *Staphylococcus aureus*, *Streptococcus* species, and gram-negative bacteria such as *Pseudomonas aeruginosa*.

Sinus thrombosis is the formation of a blood clot within the sinuses, which are air-filled spaces in the skull that are lined with mucous membranes. The most common cause of sinus thrombosis is infection, which leads to the formation of a blood clot in response to the inflammatory process. The most common organisms associated with sinus thrombosis are *Staphylococcus aureus* and *Streptococcus* species.

Symptoms

The symptoms of POO with sinus thrombosis can be variable and nonspecific, which can make diagnosis challenging. The most common symptoms of POO with sinus thrombosis include neck pain, fever, headache, and nausea. Other symptoms may include stiffness of the neck, difficulty moving the head, and muscle weakness.

If the infection spreads to the sinuses, additional symptoms may develop, such as facial swelling, sinus pain, and nasal discharge. If the sinus thrombosis is severe, it can lead to complications such as stroke, vision loss, and seizures.

Diagnosis

The diagnosis of POO with sinus thrombosis can be challenging and often requires a combination of imaging studies and laboratory tests. The initial evaluation of a patient with suspected POO with sinus thrombosis may include a thorough physical examination and a review of the patient's medical history.

Imaging studies are essential for diagnosing POO with sinus thrombosis. The most commonly used imaging studies include Magnetic Resonance Imaging (MRI) and Computed Tomography (CT) scan. MRI is the preferred imaging study for evaluating the odontoid process and detecting sinus thrombosis. CT scan is useful for detecting bony abnormalities and identifying the extent of the infection.

Laboratory tests may include blood cultures, which can identify the bacteria causing the infection. In addition, a Complete Blood Count (CBC) can identify an elevated white blood cell count, which is indicative of an active infection.

Treatment

The treatment of POO with sinus thrombosis typically involves a combination of antibiotics and surgery. Antibiotics are the first-line treatment for POO with sinus thrombosis and are aimed at eradicating the bacterial infection. The choice of antibiotic depends on the type of bacteria causing the infection, as identified by the blood cultures. Intravenous (IV) antibiotics are typically required to achieve adequate tissue levels of the drug.

Surgery may be necessary if the infection is not responding to antibiotics or if there is evidence of spinal cord compression or instability. The most common surgical procedure for POO with

Correspondence to: Belle Polli, Department of Cardiology, Hospital of Annecy, Annecy, France, E-mail: Bellepolli@gmail.com

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sinus thrombosis is anterior odontoid screw fixation, which involves the placement of a screw into the odontoid process to stabilize the spine.