Module 7: Infection

Case presentation: *Pyogenic infection*

Participants should discuss the salient features of the clinical presentation and differential diagnosis of pyogenic infection of the spine.

Point out risk factors for this condition and discuss appropriate radiographic and laboratory investigations. Also consider the strategy for obtaining a tissue diagnosis and principles of management (both medical and surgical).

Lecture: *Assessment and management of pyogenic spinal infection*

Outline the common clinical presentation and history, the etiology and risk factors, and conditions associated with pyogenic infection of the spine, eg, diabetes, HIV, IV drug use, immunocompromise.

Review the appropriate radiographic and laboratory investigations, plain x-rays, MRI, CT, and bone scan and laboratory tests (such as WCC, ESR, CRP), and how they can be used to monitor the progress of treatment.

Also discuss the need to isolate the infective organism, the principles of biopsy, the common pathogens and the appropriate selection, timing, administration, and duration of antimicrobial therapy.

Emphasize the need to interact with infectious disease specialists in relation to the ongoing management of antimicrobial therapy.

Also discuss the indications for surgical intervention and the principles of treatment—neural decompression, debridement, achieving and maintaining stability, and management of potential complications.

Learning outcomes

- Identify the features in the history and on physical examination of pyogenic infection of the spine
- Recognize risk factors associated with the development of this condition
- Order and interpret appropriate radiographic and laboratory investigations
- Describe the principles of medical and operative treatment of this condition
- Initiate and supervise appropriate management of spinal infection

Case presentation: *Spinal tuberculosis infection*

Participants should discuss the history and presentation of this condition and the “at risk” populations.

They should be able to request and interpret appropriate radiographic and laboratory investigations, plain x-rays, MRI, CT, bone scans, and laboratory tests (such as WCC, ESR, and CRP).

Point out risk factors for this condition and discuss appropriate radiographic and laboratory investigations. Also consider the strategy for obtaining a tissue diagnosis and principles of management, both medical and surgical

Lecture: *Assessment and management of spinal tuberculosis infection*

Outline the common clinical presentation and history, etiology, risk factors, and conditions associated with TB infection of the spine.

Review the appropriate radiographic and laboratory investigations, plain x-rays, MRI, CT, and bone scan, and laboratory tests (such as WCC, ESR, and CRP), and how they can be used to monitor the progress of treatment.

Also discuss the need to isolate the infective organism, and the administration and supervision of appropriate antimicrobial therapy.

Indications for surgical intervention and the principles of treatment, neural decompression, debridement, achieving and maintaining stability, and the management of potential complications should also be discussed.

The need to interact with infectious disease specialists in relation to the ongoing management of antimicrobial therapy should again be emphasized.

Learning outcomes

- Identify the features on history and physical examination of TB infection of the spine
- Recognize risk factors associated with the development of this condition
- Request and interpret appropriate radiographic and laboratory investigations
- Describe the principles of medical and operative treatment of this condition
- Initiate and supervise appropriate management of TB infection of the spine

Case presentation: *Postoperative spinal infection*

Participants should discuss the history, presentation, and etiology of early and late postoperative infection. Also review factors indicating increased risk of postoperative infection such as diabetes, immunosuppression, steroid use, prolonged surgery, smoking, obesity, etc.

Also discuss the implications of spinal instability in relation to the management of this condition, as removal of instrumentation is not an option in this situation.

Lecture: *Assessment and management of postoperative spinal infection*

Review the incidence, risk factors, clinical presentation, and assessment of early and late postoperative infection, appropriate investigations, their interpretation and principles of management.

Participants should be able to differentiate findings due to infection from "normal" postoperative changes and laboratory tests such as the WCC, ESR, and CRP.
Also discuss the indications for and timing of surgical intervention, debridement and removal of instrumentation, and the clinical and radiographic assessment of stability in this context, eg, implant loosening, deformity, pain.

Focus on the need to maintain/restore stability while elimination or controlling the infection as well as principles in relation to determining the duration of antimicrobial treatment, both IV and oral. Also cover strategies to manage deep infection such as the use of negative-pressure wound therapy, etc.

Learning outcomes

- Identify patients with early and late postoperative infection
- Describe the treatment principles of the medical and surgical management of this complication
- Initiate and monitor the progress of treatment and response to therapy
- Explain the biomechanical principles and need to maintain stability.

Lecture: *Principles of performing percutaneous biopsy for infection and tumor*

Discuss the principles of performing a biopsy to diagnose spinal infection or tumor.

Review the principles regarding the timing of antimicrobial treatment and the fact that the differentiation of infection and tumor may be difficult if relying on imaging alone.

Learning outcomes

- Describe the principles of performing a spinal biopsy to obtain a tissue diagnosis of spinal infection or tumor
- Request and interpret the results of a spinal biopsy