Necrotizing Central Nervous System Infection with Brain Herniation in a Patient with *Clostridium septicum* Bacteremia and a Small Bowel Obstruction

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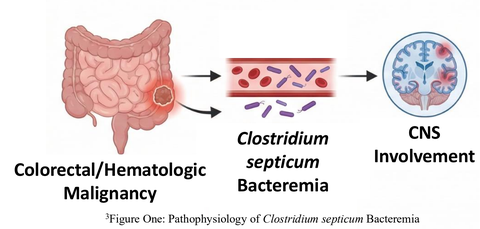
Background

- *Clostridium septicum* bacteremia is rare, rapidly fatal, and strongly associated with gastrointestinal pathology and colorectal or hematologic malignancy.[1-2]



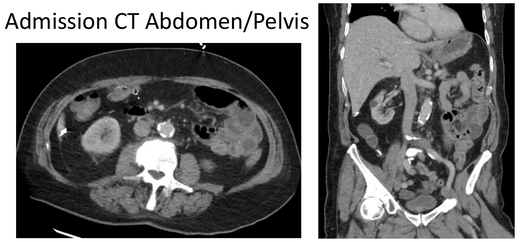
[3]Figure One: Pathophysiology of *Clostridium septicum* Bacteremia

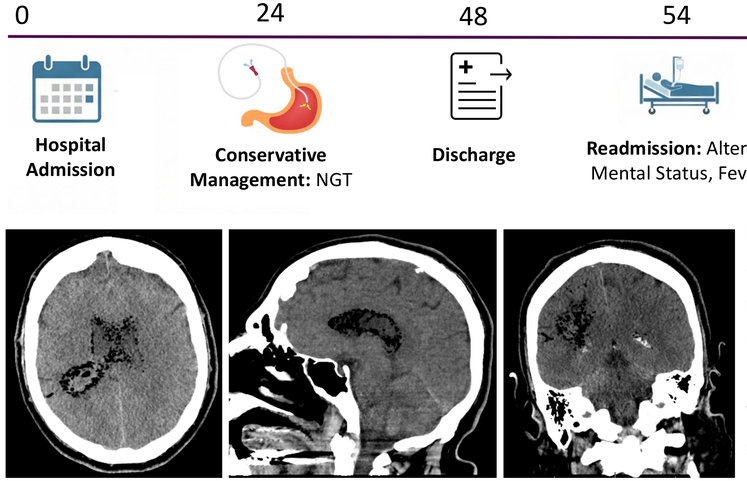
- Central nervous system (CNS) involvement is exceedingly rare and almost uniformly fatal.[4]
- Here we present a patient with rapidly progressive, fulminant CNS associated *C. septicum* bacteremia in the setting of a small bowel obstruction (SBO) and IgG kappa smoldering multiple myeloma (SMM).

Case Details

74-year-old male with a history of IgG kappa SMM, transverse colectomy for lipoma, and sigmoidectomy for recurrent diverticulitis admitted for an SBO and discharged after 48 hours of conservative management with nasogastric tube (NGT) decompression.

Admission CT Abdomen/Pelvis





CT Head demonstrated pneumocephalus, emphysematous cerebritis, right parietal and cerebellar abscesses, and global cerebral edema. The patient rapidly deteriorated and lost brainstem reflexes. Supportive measures were withdrawn and the patient passed. Blood cultures resulted positive for *Clostridium septicum.*

Conclusion

- In this case, a fulminant CNS infection occurred in the setting of an SBO in a patient with a surveilled pre-malignant hematologic condition.
- Transient mucosal compromise in an SBO, may represent an underrecognized pathway for *C. septicum* hematogenous translocation.
- Clinicians should maintain a high index of suspicion for a *C. septicum* infection in a patient with sepsis, gastrointestinal pathology, and a premalignant or immunocompromised condition.

References

1. Nanjappa S, Shah S, and Pabbathi S. *Clostridium septicum* Gas Gangrene in Colon Cancer: Importance of Early Diagnosis. *Case Reports in Infectious Diseases.* 2015:1-3. DOI: 10.1155/2015/694247.
2. Chew SSB & Lubowski DZ. *Clostridium septicum* and malignancy. *ANZ Journal of Surgery.* 2001;71(11);647-649. DOI: 10.1046/j.1445-1433.2001.02231.x.
3. Figure 1: Image generated by FigureLabs from the prompt pathophysiology of *Clostridium septicum* bacteremia with CNS involvement.
4. Tan DJA, Sng ECY, and Ling XW. *Clostridium septicum* brain abscess. *BMJ Case Rep.* 2022;15(11). DOI: 10.1136/bcr-2022-251719.
5. Helmink AJ, Wahlig TA, Fey PD, et al. 60-year-old male with rapidoly progressive pneumocephalus caused by *Clostridium septicum* in the setting of an occult colonic adenocarcinoma. *BMC Infectious Diseases.* 2023; 23(189). DOI: 10.1186/s12879-023-08160-0.