IMMUNOSUPPRESSION IN A CHRONIC TOTAL PARENTERAL NUTRITION PATIENT CAUSING INVASIVE PULMONARY CANDIDIASIS

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INTRODUCTION

- The complications of total parenteral nutrition (TPN) are well established in the literature, including a higher risk of fungal infections via immune system dysregulation, translocation, seeding, etc.
- We present a 42-year-old female requiring chronic TPN who was found to have cavitary pulmonary candidiasis.

CASE REPORT

- A 42-year-old female with ileocolonic Crohn's disease complicated by multiple bowel resections and Roux-en-Y bypass was evaluated inpatient for a two-week history of daily fevers and nonproductive cough.
- The patient was dependent on nutritional replacement therapy after failed percutaneous endoscopic gastrostomy requiring Mediport catheter placement for TPN feedings.
- Physical examination showed decreased breath sounds in all lung fields without adventitious breath sounds
- Due to short gut syndrome secondary to her complicated Crohn's disease course, she was dependent on TPN.
- She had no history of malignancy or cardiac conditions, including valve abnormalities.

INVESTIGATIONS

- Labs significant for leukocytosis
- CT scan revealed a 2x2 cm cavitary consolidation in the lingula and a 1.9x1.7 cm cavitating lesion in the left upper lung lobe (Fig. 1)
- Mediport and bronchial wash cultures both grew Torulopsis glabrata.
- Fungal blood cultures were negative.

MANAGEMENT

- Empiric antibiotic therapy with IV meropenem, linezolid, and voriconazole was initiated, but the patient continued to spike high fevers without improvement.
- Mediport was removed and exchanged
- Antifungal therapy was switched to anidulafungin for extended *Candida spp.* coverage
- After four weeks of appropriate antifungal therapy, the fevers resolved, and she was discharged.

CONCLUSION

- Aside from well-known risk factors, including central venous catheter placement and chronic antibiotic usage, the longer duration of both peripheral parenteral and total parenteral nutrition has been found to be the strongest risk factor for candidemia per previous studies
- Mechanisms include loss of gut barrier and immune system dysregulation
- Antifungal prophylaxis in patients such as ours could have been beneficial
- Guidelines regarding antifungal prophylaxis in chronic TPN-dependent patients are warranted

DISCUSSION

- TPN predisposes to fungal infections by varied mechanisms.
- In our patient, given the anatomical path of the catheter, septic fungal emboli from the Mediport is the most plausible mechanism of invasive candidiasis.
- The vulnerability of our patients to fungal infections is likely because of gut disruption in the setting of short-gut syndrome and long-term TPN dependence.
- TPN-related infection risk occurs at both tissue and cellular levels. Loss of gut barrier function due to epithelial disruption and decreased IgA production is seen in chronic TPN users.
- Studies also show that TPN causes shifts in the gut microbiome resulting in decreased regulatory T-cells and dysregulation of toll-like receptors.
- Some fungi, such as *Candida* species, can multiply in parenteral nutrition solutions in which even bacteria cannot grow.
- Prophylactic usage of antifungal medications in critically ill patients who require TPN is being studied, but data on the efficacy of therapy for those requiring long-term TPN is lacking.

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CORRESPONDENCE

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FIGURE 1 – CHEST CT

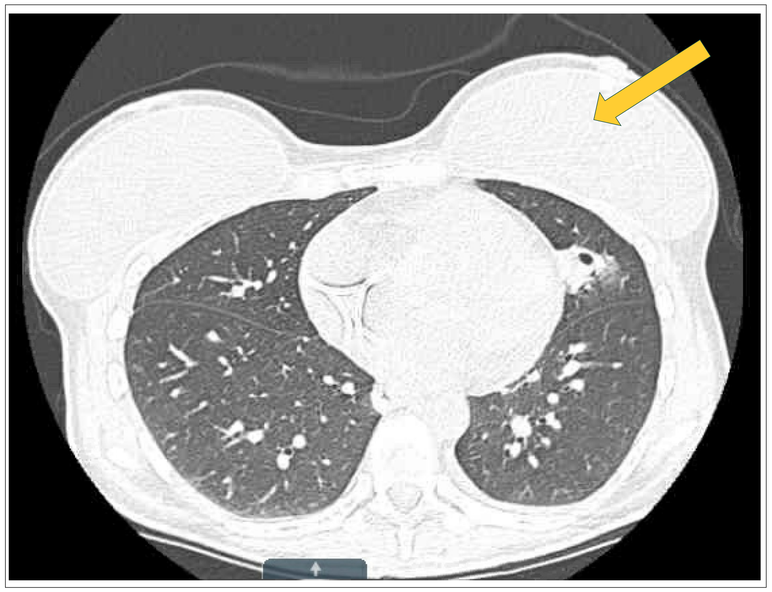

FIGURE 2 – CATHETER ANATOMY

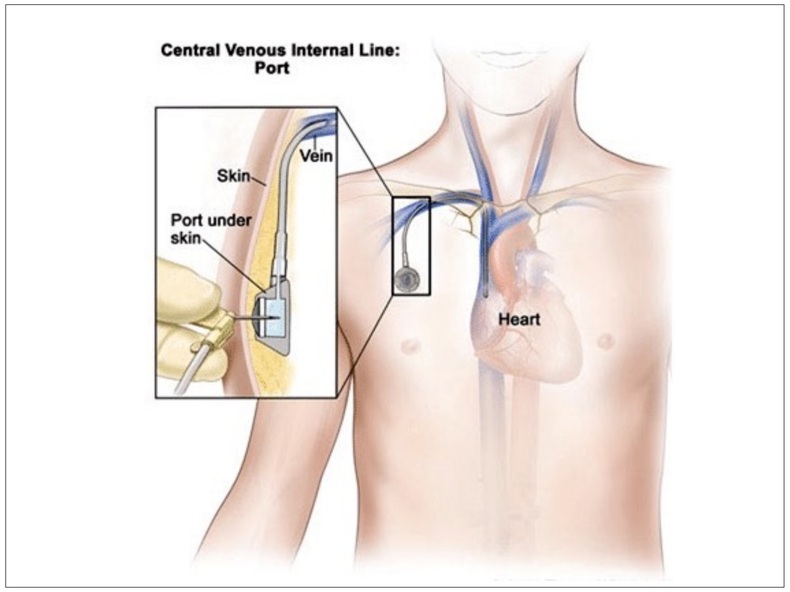

FIGURE 3 – FACTORS IN DEVELOPMENT OF INVASIVE CANDIDIASIS