CASE SERIES ON FUSARIUM PERITONITIS IN CONTINUOUS AMBULATORY PERITONEAL DIALYSIS PATIENTS

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INTRODUCTION

Peritoneal dialysis (PD) peritonitis is a serious complication of continuous ambulatory peritoneal dialysis (CAPD) patients.
PD peritonitis presents with symptoms such as abdominal pain, fever, cloudy dialysate fluid and vomiting.
Although bacterial peritonitis remains the most common cause of peritonitis, fungal peritonitis also has been rising and can be life threatening if not treated.
Here we are reporting two case series involving Fusarium spp in CAPD patients.

CASE 1

58 years old gentleman, underlying end stage renal failure secondary to diabetes mellitus and hypertension on CAPD since early 2023.
He initially presented in early February 2024 complaining of turbid peritoneal dialysate fluid.
He denied abdominal pain or fever.
His blood investigation: TWC: 15,000u/L, Hb:12 g/dL and platelet: 167,000 u/L and C-reactive protein(CRP): 41mg/L.
Clinically his abdomen was not tender and no discharge noted from the exit site of Tenckhoff catheter.
PD fluid was sent for culture and sensitivity which grew Fusarium spp.
The sensitivity for this patient was not available. His blood culture however showed no growth.
Ultrasound abdomen was performed and revealed no intrabdominal collections.
Tenckhoff catheter was removed. He was started on intravenous (iv) amphotericin B 0.7mg/kg/day and oral voriconazole 400mg loading for a day then 200mg BD in which he completed 21 days post Tenckhoff catheter removal. He was converted to haemodialysis via internal jugular catheter.
He remained well till date.

CASE 2

53 years old gentleman underlying end stage renal failure secondary to diabetes mellitus and hypertension, dialysing via CAPD since early 2023.
He had multiple admissions in 2023 for fluid overload and had multiple exposure to antibiotics.
He was then admitted in January 2024 complaining of generalised abdominal pain associated with loose stool and turbid peritoneal dialysate fluid.
Clinically his abdomen was tender and no discharge noted from the exit site of Tenckhoff catheter.
His blood investigation:TWC:10,000u/L,Hb:8g/dL and platelet:274,000u/ and CRP:112mg/L.
PD fluid was sent for culture and sensitivity which grew Fusarium spp (Figure 1,2).
His blood culture and blood fungal culture no growth noted. The susceptibility testing result (Table 1) noted to be sensitive towards voriconazole, fluconazole and itraconazole.
Ultrasound abdomen was performed and revealed no intrabdominal collections.
He was started on IV lipid complex amphotericin B 300mg and oral voriconazole loading 400mg BD for a day then 200mg BD.
Tenckhoff catheter was removed and he was converted into hemodialysis.
He completed iv amphotericin B and voriconazole for 21 days.
However, despite the adequate treatment, patient continued to deteriorate and succumbed due to acute coronary syndrome, with no symptoms of recurrent fungal infections.

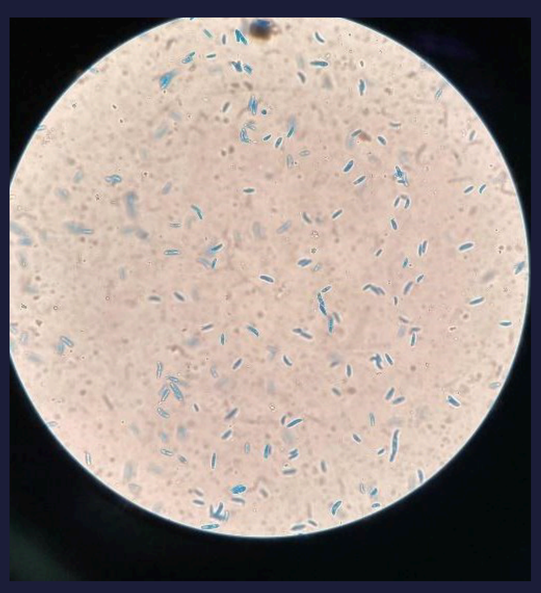

Figure 1: microscopic picture of Fusarium sp of case 2

Figure 2: picture of plate of Fusarium sp of case 2

DISCUSSION

PD peritonitis is an inflammation of peritoneum commonly caused by bacterial infection.
PD related peritonitis contributes to 18 % of death in patients undergoing PD. Although the most common cause of peritonitis remains bacterial infection, fungal peritonitis can occur and lead to higher mortality . [8]
The commonest cause of fungal peritonitis is caused by Candida spp however Fusarium spp on the other hand can be an emerging fungal pathogen especially in immunocompromised patients and has high tendency to attach to foreign bodies such as Tenckhoff catheters. [8]
Fusarium spp is large genus of filamentous fungi that are known to cause plant diseases. They are most commonly found in soils and mostly harmless. The most common species that was reported was F. solani and F oxysporum.
However, they are also known to produce mycotoxins that cause large problems in human beings that can affects endocrine, nephrotoxicity and hematological diseases.
Fusarium spp can cause opportunistic infections in human among immunocompetent as well as immunocompromised patients which can lead to locally invasive or disseminated infections. [1]
It is the second most common mold infections in human after aspergillosis especially among immunocompromised patients. [2]
The disseminated fusariosis can have skin lesions with necrotic centres similar to ecthyma gangrenous with of 90 days survival rate. [2]
The skin lesions can be the early sign of disseminated Fusarium infection and early initiation of therapy can be lifesaving. [7]
The risk factors for is mainly due to trauma or skin breakage which can be the entry point for fusariosis in 40-60% of patients. [3]
Fungal peritonitis typically happens to patients who have been exposed to multiple broad spectrum antibiotics [8], [9]
Fusarium can respond poorly to antifungal therapy alone, hence surgical removal of the source usually required. [5]
Biofilm formation is the predominant mechanism of fungal resistance in many filamentous fungi such as Aspergillus, Fusarium, Scedosporium and Trichophyton spp.[6]
Management of Fusariosis is liposomal amphotericin B with voriconazole or posaconazole for salvage therapy, followed by good source control such as surgical debridement of the affected tissues. [2], [4] and removal of the catheters.
Some papers have published successful treatment with oral posaconazole alone with catheter removal. [8]

CONCLUSION

Fusarium peritonitis can successfully be treated with catheter removal and a combination therapy of iv amphotericin B and voriconazole.

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PD Fluid culture	Fusarium sp	Minimum inhibitory concentration(mic)ug/mL
sensitivity	Fluconazole	<0.0313
	voriconazole	<0.0313
	itraconazole	0.125

Table 1:
susceptibility testing result of case 2