PERITONEAL TUBERCULOSIS IN DIALYSIS: TIME TO CHANGE THE DIAGNOSIS AND CUTTING THE GORDIAN KNOT

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Introduction

The incidence of tuberculosis (TB) in Perú is high, especially in patients undergoing chronic dialysis. Is important to recognize early a diagnosis of peritoneal tuberculosis to avoid complications and treat it on time.

Methods

Case report.

Clinical Case

A 57-year-old male Peruvian patient with CKD on peritoneal dialysis (PD) from 2018 to 2023 and discontinuation by recurrent peritonitis, then haemodialysis therapy, and resumed continuous ambulatory peritoneal dialysis in 2024. Is admitted to the hospital by episodic nausea, vomits, and watery diarrhea not mucus or blood for 2 months. In addition, nocturnal diaphoresis, abdominal pain, and lastly cloudy effluent two days prior. Laboratory examination is shown in the table 1 and 2. The initial treatment was piperaciline/ tazobactam 2.25 mg IV q12hr and vancomycin 500mg IV q48hr, but it had no response. On day 3 started haemodialysis. On day 5 the blood cultures were negative and the antibiotic treatment was changed to meropenem 500 mg IV q24hr and catheter tenckoff was removed. On day 14, the patient had fever and abdominal pain. The tomography reported pancreatic cyst suggestive of serous cystadenoma or neuroendocrine tumor, peritoneal carcinomatosis, hypointense non-contrast-enhancing tumors in the liver and spleen suggestive of metastases, and plenty of ascitic fluid. The culture of dialysis effluent, peritoneal fluid, and Ziehl-Neelsen staining were negative. The treatment was changed to tigecycline 50 mg IV q12hr, fluconazole 150 mg IV q12hr, and continued meropenem. On day 17, because of non-clinical response by persistent fever, the treatment was changed empirically to antimycobacterium tuberculosis.

Table 1. Laboratorial data

Day of hospitalization	1st	4th	17th	24th
Leukocytes (cell/mm3)	17.1	19.1	9.9	7.7
Neutrophiles (%)	88	80	76.6	78
Hemoglobin (g/dl)	10.2	9.7	8.1	8
C-reactive protein (mg/L)	>90	275.24	177	99.08
Peritoneal fluid- (Cell/µL)	105	280	200	128
Peritoneal fluid - polymorphonuclear leukocytes (%)	60%	50%	90%	80%
Peritoneal fluid – mononuclear cells (%)	40%	50%	20%	20%
Peritoneal fluid – Culture	Negative	Negative	Negative	Negative
Peritoneal fluid – Adenosine deaminase (U/L)	5.32		40.55	

At day 20, a sample of peritoneal fluid was obtained, but it was centrifugated. The GenXpert positive confirmed the diagnosis of peritoneal tuberculosis. Lastly, the patient improved their clinical and laboratory condition and the day 28 was discharged from the hospital.

Table 2. Microbiological mycobacterium test

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Day of hospitalization		4th	6th	7th	20th		
Ziehl-	Sputum	Negative	Negative	Negative			
Neelsen	Gastric	Negative	Negative	Negative			
staining	aspirate						
	Stool	Negative	Negative				
GenXpert		MTB non detected (non centrifugated)			Positive MTB (centrifuged sample)		

Discussion

The peritoneal tuberculosis is a diagnostic challenge. This clinical case delayed 20 days to reach the diagnosis because lack of a confirmatory test and additionally the clinical case mimics bacterial peritonitis (predominance of polymorphonuclear cells). Adenosine deaminase (ADA) has a proper sensitivity but one cause is possibly related to purulent collections, so this result is not always helpful in the diagnosis (specificity is not high)¹. The microbiological test to mycobacterium as Ziehl-Nielseen stainings have low sensitivity and the culture delays several weeks. The World Health Organization (WHO) recommends the use of Xpert MTB/RIF in patients with signs and symptoms of extrapulmonary tuberculosis, as the initial diagnostic test in peritoneal fluid (moderate certainty of evidence)². This gene amplification technique changes the time for diagnosis from 60 days (culture) to less than 2 hours. Besides, is known in tuberculous peritonitis the sensitivity of smears and cultures is enhanced by centrifuging³. Thus, we converge both strategies to optimize the diagnosis, detecting tuberculosis only when the sample was centrifugated (Table 2). We thought to reach this goal, it is necessary to break these difficulties: 1. Arrange with the tuberculosis unit of the microbiology department to follow the recommendations from WHO and perform the centrifugation (not widely used). 2. Guide the efforts from nephrologists to do the GenXpert primarily and properly (e.g. the quantity recommended to obtain peritoneal fluid is 50 to 150 ml). Finally, is important to recognize the tomographic pattern of peritoneal tuberculosis because the Encapsulating peritoneal sclerosis (EPS) caused by tuberculosis can mimic a peritoneal carcinomatosis as in this case⁴. Unfortunately, this kind of complication is associated with late diagnosis, hence, is time to cut the Gordian knot, especially in the population of highrisk for tuberculosis as the dialysis patients in Perú.

Conclusion

Cutting the Gordian knot requires integrating the strategy GenXpert test in a centrifugated sample of 50-150 ml peritoneal fluid to improve the diagnosis of tuberculosis peritoneal in a dialysis patient.