Peritonitis in CAPD (Missouri University Criteria)

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SUMMARY

Infectious peritonitis in CAPD is almost certain if white cell counts in dialysate exceed 100 cells/mm^3 and greater than 50 % of the white cells are neutrophils.

Sterile peritonitis is highly unusual if leukocyte counts are increased and the cells are predominantly neutrophils. Eosinophilic-peritonitis is seen infrequently and may represent some form of chemical or allergic irritation of the peritoneum.

The treatment used is i. p. Cephazolin (125 mg/l.) and a loading dose of Tobramycin 1,5 mg/kg. once the sample for cultive has been submitted. This treatment is adjusted afterwards according the bacteriological culture.

The catheter should be removed if there is no improvement in 48 hours of antibiotic therapy.

In 44 episodes of peritonitis treated along 1981 there were 64 % caused by Gram-positive, 20 % by Gram-negative, 9 % mixed and 7 % unidentified.

The incidence was 1,5 episodes per patient-year in 1981, and-1 episode per patient-year in 1980. There was no fungal peritonitis.

Key words: CAPD, Peritonitis, Eosinophilic Peritonitis.

RESUMEN

El diagnóstico de peritonitis infecciosa en DPCA se basa en la presencia en el líquido de diálisis drenado de más de 100 células/mm^3, de las que el 50 % o más son neutrófilas.

Con estos criterios es muy rara la peritonitis «estéril» si los procedimientos de cultivo bacteriano son rigurosos. Ocasionalmente pueden verse peritonitis eosinofílicas (predominio celular-eosinofílico), estériles, benignas y probablemente alérgicas o tóxicas.

El protocolo de tratamiento utilizado incluye la administración inmediata (previa al resultado de cultivo) de Cefazoline i. p. 125 mg/l., junto con una dosis parenteral de tobramicina (1,5 mg/kg. de peso). Esta pauta es posteriormente modificada conforme a la identificación y sensibilidad del germen.

El fracaso de la terapéutica antibiótica después de 48 horas es indicación de retirada del catéter y sugestivo de infección del túnel, material infectado dentro del catéter o infección por hongos.

De los 44 episodios tratados en la Universidad de Missouri, en un 64 % el germen causal fue gram-positivo, 20 % negativo, 9 % mixto y 7 % no identificado. En un tercio de los casos fue necesaria la retirada del catéter. No hubo peritonitis por hongos, atribuyendo los autores a la pronta retirada de los catéteres si el resultado del tratamiento no era bueno precozmente.

La incidencia de peritonitis osciló entre 1 episodio paciente-año en 1980 y 1,5 en 1981.

Palabras clave: DPCA, peritonitis, peritonitis eosinofílica.

DIAGNOSTIC CRITERIA

Infectious peritonitis is almost certain if white cell counts in dialysate exceed 100 cells/mm^3 and greater than 50 % of the white cells are neutrophils. Gram stains of centrifuged samples of dialysate will be positive in about 50 % of cases. Cultures are almost always positive in the presence of the above conditions provided filter or centrifugation techniques are used to concentrate bacteria.

NON-INFECTIOUS PERITONITIS

In our program, sterile peritonitis is highly unusual if leukocyte counts in dialysate are increased and the cells are predominantly neutrophils. Reasons for differences in other programs are not clear. Eosinophilic peritonitis is seen infrequently and may represent some form of chemical or allergic irritation of the peritoneum. It is usually mildly symptomatic or asymptomatic and frequently disappears without therapy.

CLOUDY DIALYSATE WITHOUT PERITONITIS

Dialysate may appear turbid without increased leukocyte counts. We have seen one patient with chylous drainage. Trauma may cause modest bleeding into the peritoneal cavity and yield a pink turbidity without elevated leukocyte counts. Fibrin particles may disperse in peritoneal dialysis solution yielding a turbid appearance.

THE TREATMENT OF PERITONITIS

If leukocyte counts are increased and predominantly neutrophils are observed, we begin therapy once the sample for culture has been submitted. We use intraperitoneal Cephalosporin (usually Kefzol, 250 mg/2-Liter exchange) for 10-14 days. We will give a loading dose of Aminoglycoside (usually Tobramycin, 1.5 mg/kg.). This will be discontinued if the culture shows organisms sensitive to Cephalosporin. If Tobramycin therapy is indicated, it will be continued intraperitoneally at concentrations of 16 mg/2-Liter for two days and then 10 mg/1-Liters thereafter. Double therapy will usually not be indicated. Heparin, 1000 units per 2-Liters is added as long as the solution is turbid or contains fibrin. If symptoms and dialysate do not clear dramatically after 48 hours of antibiotic therapy to which the organism is sensitive, the catheter should be removed. Failure to improve with appropriate therapy suggests a tunnel infection (obvious or occult), infected material within the catheter, or a foreign body effect of the catheter perpetuating infection. A positive fungal culture on two occasions is an indication for catheter removal. Fungi frequently grow into the peritoneal catheter material.

Following catheter removal, therapy should be continued for at least two weeks by oral or intramuscular routes. A new catheter can be placed thereafter.

Table I reviews peritonitis experiences in our program for 1981.

During the past year in our University of Missouri program, gram-positive organisms represent nearly half of our culture results. Our incidence of sterile peritonitis is 7 % and only in cultures obtained at outlying hospitals not using concentration techniques. We had no fungal peritonitis during the past year which we attribute to prompt catheter removal if therapy is not succeeding. Nearly half of the episodes of peritonitis can be cared for on an outpatient basis. Over a third of the episodes of peritonitis required catheter removal for prompt remission. In one-half of these, there was an associated tunnel infection. Contributions of the catheter in the other cases were not clear. During the past two years the incidence of peritonitis in our program was one episode per patient year in 1980 and 1.5 episodes per patient year in 1981.

TABLE I

EXPERIENCE AT UNIVERSITY OF MISSOURI (1981)

1.	Patient years	29
2.	Episodes of peritonitis	44
3.	Episodes/patient year	1.5
4.	Cultures:	
	Gram +	64 %
	Gram –	20 %
	Mixed	9 %
	Unidentified	7 %
5.	Hospitalization for therapy	48 %
6.	Associated tunnel infection	18 %
7.	Catheter removal with peritonitis	36 %

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