

Peritoneal Dialysis: Peritonitis

Site Applicability

VGH

Practice Level

RN with additional education and training in peritoneal dialysis

Background Information

A diagnosis of peritonitis is made when (2) two of the following (3) conditions are present:

1. Signs and symptoms of peritoneal inflammation: (abdominal pain, diarrhea, nausea, vomiting, fever, abdominal tenderness, or absent bowel sounds).
2. Cloudy peritoneal fluid with elevated peritoneal fluid white cell count $>100 \times 10^6$ due predominantly to neutrophils ($>50\%$).
3. Gram stain or culture positive for bacteria.

Portals of Entry:

1. Transluminal - contamination due to a break in the integrity of the closed system or contamination during the exchange connection/disconnection procedures; touch contamination, staph species most common.
2. Periluminal: Along the outer surface of the catheter.
3. Hematogenous - transient bacteremia sometimes associated with sigmoidoscopy & dental procedures; streptococcus most common species.
4. Transmural: through the bowel wall - increased incidence with diverticular and vascular disease. Associated with unresolved constipation and acute treatment for constipation; enteric and anaerobic organisms are seen while multiple gram negative organisms suggest bowel perforation¹

Incubation period for touch contamination is 6 - 48 hours.

Problem Statement

Peritonitis complications can lead to catheter loss, technique failure, protein losses, fluid weight gain, adhesion and abscess formation, transfer to hemodialysis and death. Risk factors include staph aureus nasal carriage, catheter exit site & tunnel infections, immunosuppressive therapy. Furthermore, dialysis solution in the peritoneal cavity dilutes the normal macrophage concentration and is directly toxic to the macrophages, neutrophils and mesothelial cells thus compromising defense mechanisms.²

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Goal

Timely treatment of peritonitis will prolong the life of the peritoneal membrane and prevent hospitalisations.

Intervention

Peritoneal dialysis patients are treated for peritonitis as outpatients unless it is necessary to admit them. After hours the Nephrologist on call will page the PDU nurse who will treat the patient in the emergency department. After unit hours of operation, the Nephrologist on call will direct the patient to the emergency department for treatment. If discharged home, the patient will be provided with instructions to return to either the Independent Dialysis Center or the hemodialysis unit within the next 24 hours for follow up treatment.

PROCEDURE / RECOMMENDATIONS / ASSESSMENT:

Click here for Peritonitis Protocol - Inpatients (PPO-44)

1. The nurse will obtain dialysate samples for Gram stain, fluid cell count, differential and C&S q 3 days for outpatients and daily for those who are admitted until normal peritoneal dialysis cell counts are achieved x 3.
2. Bloodwork will be obtained for CBC, differential, electrolytes, urea, creatinine and lipase. If temperature > 38.0°C., obtain blood cultures
3. In/Out dialysis exchanges X 3 with Heparin 1000 units/bag. Add Heparin to the dialysis solution until the drainage is clear to prevent fibrin formation and possibly subsequent adhesion formation.
 - Instill intraperitoneal antibiotics as per Doctor's order based on the patient's weight, urinary output and allergy status. Once daily dosing with 6-hour dwell is the recommended treatment. The initial objective is to use broad spectrum antibiotics such as a first and third generation cephalosporin (e.g. cefazolin and ceftazidime) to cover both gram-positive and gram-negative organisms and then modify the treatment based on culture results. For further medication guidelines see PDI Recommendations 2010.
 - Both antibiotics can be mixed together in the same dialysis bag.
4. For ongoing outpatient treatment, the IDC will fax the antibiotic and dextrose strength order to:
 Laurel Prescriptions
 102, 888 West 8th Avenue, Vancouver, BC V5Z 3Y1
 HOURS: MON-FRI 9:00-6:00 / SAT 9:00-1:00
 PHONE: 604-873-5511
FAX: 604-873-5581
5. Changes occur in the dialysis kinetics during peritonitis. Clearances increase initially and more rapid glucose absorption occur. Some patients need to use higher
6. glucose concentrations for a few days to maintain fluid balance.
7. Assess need for analgesics/anti-emetics.
8. Give the patient next appointment and instructions. (Patient Education Pamphlet Catalogue No. FP.460.In7.ML) Instructions for Patients with Peritonitis.

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Reasons peritonitis does not clear: inappropriate or inadequate therapy, exit or tunnel infections, intraperitoneal abscess, colonization of the catheter or ruptured viscera.

Catheter Removal: indications include unresolved peritonitis, tunnel, fecal, fungal, infection.

Prevention: effective patient training, protocol for prophylactic treatment of known contamination, treat staph aureus nasal carriers, good hand washing, treat exit site trauma, & diagnose and treat exit site infections promptly.¹

Documentation

According to Patient Care Guidelines: Charting standard for nursing documentation, Physician Peritonitis order sheet, Peritonitis tracking sheet.

ASSOCIATED GUIDELINES / FORMS / EDUCATIONAL MATERIAL:

References

1. Prowant, B. F., Ponferrada, L.P.& Satalowich, R.J. (2008) Peritoneal Dialysis. In Counts, C.S. (Ed.) Core Curriculum for Nephrology Nursing, Fifthe Edition (pp.768-847). Pitman, NJ: American Nephrology Nurses Association
2. Leehey, David J., Gandhi, Vasant C., and Daugirdas, John T., Peritonitis and Exit Site Infection. In Blake, P., Daugirdas, J., Ing, T. (Eds) Handbook of Dialysis (pp373- 398).Philadelphia, PA: Lippincott Williams & Wilkins.
3. ISPD Guidelines/Recommendations: Peritoneal Dialysis-Related infections, Recommendations: 2010. Peritoneal Dialysis International, 30/4, pp393-423.
4. <http://www.ispd.org>

UNIT(S) OF ORIGIN: **Peritoneal Dialysis Unit**

Approved for Posting

(Interim) Professional Practice Director - Nursing, Vancouver

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Alternate Search Terms

PDU

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