1 Jade
2 Jeff
3 Swap
4 Nayan
5 Sophia
6 Topf

1.0 Peritonitis

1.1 We recommend that peritonitis should be diagnosed when at least two of the following are present:

1.1.1 clinical features consistent with peritonitis, that is, abdominal pain and/or cloudy dialysis effluent;

1.1.2 dialysis effluent white cell count > 100/mL or >0.1 109/L (after a dwell time of at least 2 h), with > 50% polymorphonuclear leukocytes (PMN);

1.1.3 positive dialysis effluent culture (1C). Jeff

2.0 Cause-specific peritonitis

2.1 We recommend a diagnosis of peritonitis according to organisms identified on culture (e.g., Staphylococcus aureus peritonitis; 1C).

2.2 We suggest culture-negative peritonitis is defined when peritonitis is diagnosed using the criteria above (criteria one and two), but no organism is identified on culture of dialysis effluent (Not Graded).

2.3 We suggest catheter-related peritonitis is defined as peritonitis that occurs in temporal conjunction (within 3 months) with a catheter infection (either exit-site or tunnel17) with the same organism at the exit-site or from a tunnel collection and in the effluent or one site sterile in the context of antibiotic exposure (Not Graded).

2.4 We suggest enteric peritonitis be defined as peritonitis arising from an intestinal source involving processes such as inflammation, perforation or ischemia of intraabdominal organs. If a peritonitis episode in this context is culture negative, we suggest that it be classified/recorded as enteric peritonitis rather than as culture-negative peritonitis (Not Graded).

3.0 Time-Specific peritonitis

3.1 We suggest pre-PD peritonitis be defined as a peritonitis episode occurring after PD catheter insertion and prior to commencement of PD treatment. The date of PD initiation is defined as the day when the first PD exchange is performed with the intention of continuing long-term PD treatment from that day (i.e. first day of

PD training or PD treatment in a hospital or at home with the intention of continuing PD long-term, whichever occurs first). The intermittent flushing of a PD catheter for the purpose of maintaining catheter patency does not qualify as PD initiation (Not Graded). Swap

3.2 For the purpose of pre-PD peritonitis rate reporting,time at risk starts from the day of PD catheter insertion and ends with PD commencement, PD catheter removal or death, whichever comes first (Not Graded). Swap

3.3 PD-related peritonitis (after PD commencement) We suggest that, for the purpose of standard peritonitis rate reporting for PD-related peritonitis, time at risk starts from the day of PD commencement (i.e. first day of PD training or PD treatment in hospital or at home with the intention of continuing PD long-term, whichever occurs first) and continues while a patient remains on PD regardless of the setting (home, hospital, residential aged care facility, etc.) or who is performing the PD exchanges (Not Graded).

4.0 PD catheter insertion-related peritonitis

4.1 We suggest that PD catheter insertion-related peritonitis be defined as an episode of peritonitis that occurs within 30 days of PD catheter insertion (Not Graded).

5.0 Measuring, monitoring, and reporting

5.1 We recommend that every programme should monitor, at least on a yearly basis, the incidence and outcomes of peritonitis (1C).

5.2 We recommend that the parameters monitored should include the PD-related peritonitis rate, organism-specific peritonitis rates, antimicrobial susceptibilities of the infecting organisms, culture- negative peritonitis and peritonitis outcomes (1C).

5.3 We suggest PD units also measure and report other peritonitis parameters, including mean time to first peritonitis episode (where time counts from the first day of PD commencement), percentage of patients free of peritonitis per unit time (target >80% per year) and pre-PD peritonitis (2C).

5.4 We suggest that the rate of peritonitis be reported as number of episodes per patient-year (Not Graded).

5.5 We suggest that organism-specific peritonitis rates should be reported as absolute rates, that is, as number of episodes per year (Not Graded).

5.6 We recommend that the overall peritonitis rate should be no more than 0.40 episodes per year at risk (1C). Nayan

5.7 In addition to reporting peritonitis rate measured as number of episodes per patient-year, we suggest the culture-negative peritonitis be reported as a percentage of all peritonitis episodes per unit time (Not Graded).

5.8 We recommend the proportion of culture-negative peritonitis should be less than 15% of all peritonitis episodes (1C).

6.0 Catheter placement

6.1 We recommend that systemic prophylactic antibiotics be administered immediately prior to catheter placement (1A).

7.0 Contamination of PD Systems

7.1 We suggest advice be sought immediately from the treatment team if contamination during PD exchange is noted (Not Graded).

7.2 We suggest prophylactic antibiotics after wet contamination of the PD system to prevent peritonitis (2D). Joel

8.0 Invasive gastrointestinal and Gynaecological procedures

8.1 We suggest antibiotic prophylaxis prior to colonoscopy (2C) and invasive gynaecological procedure (2D).

8.2 We suggest drainage of PD fluid to keep the abdomen empty before endoscopic gastrointestinal and invasive or instrumental gynaecological procedures (2D). Swap

9.0 Training Programmer

9.1 We suggest that the characteristics of an optimal PD training programme (how, how long, where, when and by whom) remain uncertain (2C).

9.2 We recommend that PD exchange technique and knowledge be regularly reassessed and updated, with an emphasis on direct inspection of practice of PD technique (1C). Jade

10.0 Domestic Pet sand zoonotic infection

10.1 We recommend PD patients take extra precautions to prevent peritonitis if domestic pets are kept (1C).

10.2 We suggest pets not be allowed in the room where PD exchange takes place, and where dialysis tubing, equipment and machine are stored (2A).

11.0 Other modifiable risk factors

11.1 We suggest that avoidance and treatment of hypokalaemia may reduce the risk of peritonitis (2C). Nayan

11.2 We suggest that avoiding or limiting the use of histamine-2 receptor antagonists may prevent enteric peritonitis (2C).

12.0 Secondary prevention

12.1 To prevent fungal peritonitis, we recommend that anti-fungal prophylaxis be co-prescribed whenever PD patients receive an antibiotic course, regardless of the indication for that antibiotic course (1B). Sophie

13.0 Initial presentation and management of peritonitis

13.1 We recommend that peritonitis always be diagnosed when at least two of the following are present: (1) clinical features consistent with peritonitis, that is, abdominal pain and/or cloudy dialysis effluent; (2) dialysis effluent white cell count >100/mLor >0.1 109/L (after a dwell time of at least 2 h), with >50% PMN; and (3) positive dialysis effluent culture (1C).

13.2 We recommend that PD effluent be tested for cell count, differential, gram stain and culture whenever peritonitis is suspected (1B).

13.3 We recommend that PD patients presenting with cloudy effluent be presumed to have peritonitis and treated as such until the diagnosis can be confirmed or excluded (1C).

14.0 Identification of causative organisms

14.1 We recommend that the blood culture bottle(s) be the preferred technique for bacterial culture of PD effluent (1C).

14.2 We suggest that sampling and culture methods be reviewed and improved if more than 15 % of peritonitis episodes are culture negative (2C).

15.0 Empiric Antibiotic Selection

15.1 We recommend that empirical antibiotic therapy be initiated as soon as possible, using either IP or systemic route, after appropriate microbiological specimens have been obtained (1B).

15.2 We recommend that empirical antibiotic regimens be centre-specific and cover both gram-positive and gram-negative organisms (1C).

15.3 We recommend that gram-positive organisms be covered by a first-generation cephalosporin or vancomycin and gram-negative organisms by a third-generation cephalosporin or an aminoglycoside (1B).

15.4 We suggest that cefepime monotherapy may be an acceptable alternative for empirical antibiotic regimens (2B).

16.0 Dosage of antibiotics

16.1 We recommend that IP antibiotics be the preferred route of administration as long as the compatibility and stability of the IP antibiotics allow, unless the patient has features of systemic sepsis (1B). Jade

16.2 We suggest that IP aminoglycoside be administered as daily intermittent dosing (2B).

16.3 We recommend that prolonged courses of IP aminoglycoside be avoided (1C).

16.4 We suggest that adjunctive oral N-acetylcysteine therapy may help to prevent aminoglycoside ototoxicity (2B).

16.5 There is insufficient evidence to make a recommendation as to whether patients on APD should be temporarily switched to CAPD during treatment of peritonitis (Not Graded).

17.0 Adjunctive treatments

17.1 We suggest that augmented peritoneal lavage should not be performed for the purpose of improving peritonitis cure (2B).

17.2 We suggest that icodextrin be considered for volume overload which occurs during acute peritonitis (2C). Topf

18.0 Subsequent management of peritonitis

18.1 We recommend that antibiotic therapy be adjusted once results and sensitivities are known (1C).

19.0 Refractory peritonitis

19.1 We recommend that PD catheter be removed in refractory peritonitis episodes, defined as failure of the PD effluent to clear after 5 days of appropriate antibiotics (1D).

19.2 We suggest that observation for antibiotic effect longer than 5 days is appropriate if PD effluent white cell count is decreasing towards normal, instead of mandatory PD catheter removal if effluent does not clear up by day 5 (2C). Jeff

20.0 Relapsing, recurrent and repeat peritonitis

20.1 We recommend timely PD catheter removal be considered for relapsing, recurrent or repeat peritonitis episodes (1C).

20.2 We suggest that simultaneous PD catheter removal and reinsertion be considered after culture of the PD effluent has become negative and the PD effluent white cell count is below 100/mL, in the absence of concomitant exit site or tunnel infection (2C).

21.0 Coagulase-negative Staphylococcus

21.1 We suggest that coagulase-negative staphylococci be treated with IP cephalosporin or vancomycin, according to susceptibility, for a period of 2 weeks (2C).

21.2 We suggest that retraining be considered for patients with coagulase-negative staphylococcal peritonitis (Not Graded).

22.0 Staphylococcus aureus.

22.1 We suggest that S. aureus peritonitis be treated with effective antibiotics for 3 weeks (2C).

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23.1 We suggest that S. aureus peritonitis be treated with effective antibiotics for 3 weeks (2C).

24.0 Corynebacterium peritonitis

24.1 We suggest that Corynebacterium peritonitis be treated with effective antibiotics for 2 weeks (2D).

24.2 We suggest that peritonitis due to beta-lactam-resistant strains, such as Corynebacterium jeikeium, should be treated with vancomycin (2C).

25.0 Enterococcus peritonitis

25.1 We suggest that enterococcal peritonitis be treated for 3 weeks with oral amoxicillin (for ampicillin-susceptible enterococci) or IP vancomycin (2C).

25.2 For peritonitis due to vancomycin-resistant Enterococcus (VRE) which are ampicillin-resistant, we suggest treatment with oral or intravenous linezolid or IP daptomycin, or teicoplanin if susceptibility is confirmed (2D).

26.0 Pseudomonas peritonitis

26.1 We suggest that Pseudomonas peritonitis be treated with 2 antibiotics with different mechanisms of action and to which the organism is sensitive for 3 weeks (2C).

26.2 We suggest that Pseudomonas peritonitis with concomitant exit-site and tunnel infection be treated with catheter removal (2D).

26.3 If there is no clinical response after 5 days of effective antibiotic treatment, we suggest that Pseudomonas peritonitis be treated with early catheter removal instead of using three antibiotics as an attempt to salvage (2D).

27.0 Acinetobacter peritonitis

27.1 We suggest that carbepenem-resistant Acinetobacter peritonitis be treated with aminoglycoside and a sulbactam-containing agent (2C).

28.0 Stenotrophomonas maltophilia peritonitis

28.1 We suggest that Stenotrophomonas maltophilia peritonitis be treated with trimethoprim–sulfamethoxazole (2D).

28.2 We suggest that S. maltophilia peritonitis be treated with two different classes of antibiotics for at least 3 weeks (2D).

29.0 Enteric gram-negative bacteria peritonitis

29.1 We suggest that enteric gram-negative peritonitis be treated with effective antibiotics for at least 3 weeks(2C).

30.0 Fungal peritonitis

30.1 We recommend immediate catheter removal when fungi are identified in PD effluent (1C).

30.2 We suggest that treatment with an appropriate anti-fungal agent be continued for at least 2 weeks after catheter removal (2C).

31.0 Tuberculous peritonitis

31.1 We suggest antituberculous therapy, instead of PD catheter removal, as the primary treatment of peritonitis caused by Mycobacterium tuberculosis (2C).

32.0 Non-tuberculous mycobacterial peritonitis

32.1 We suggest that Ziehl–Neelsen staining for acid-fast bacilli be requested when there is a clinical sugge tion of non-tuberculous mycobacterial (NTM) peri- tonitis, including persistent culture-negative peritonitis (2D).

32.2 We suggest that NTM peritonitis be treated with both effective antibiotics and catheter removal (2D).