

Antibiotic duration can be shortened in postoperative intra-abdominal infection

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Provenance: This is an invited Editorial commissioned by the Section Editor Xue-Zhong Xing [National Cancer Center (NCC)/Cancer Hospital, Chinese Academy of Medical Sciences (CAMS) and Peking Union Medical College (PUMC), Beijing, China].

Comment on: Montravers P, Tubach F, Lescot T, *et al.* Short-course antibiotic therapy for critically ill patients treated for postoperative intra-abdominal infection: the DURAPOP randomised clinical trial. *Intensive Care Med* 2018;44:300-10.

Submitted Jul 16, 2018. Accepted for publication Jul 18, 2018.

doi: 10.21037/jtd.2018.07.93

View this article at: <http://dx.doi.org/10.21037/jtd.2018.07.93>

Complicated intraabdominal infection (cIAI) is widely considered as a common disease in clinical practice nowadays. Even though surgical procedures for source control have been improved over the past decades, one of the key components in treatment of cIAIs is adequate antimicrobial therapy.

From diagnostic uncertainty, broad-spectrum and combined antimicrobial therapy are usually administered for patients with cIAIs to cover all possible pathogens. Moreover, clinicians have difficulties in recognizing when to provide and when to withhold antimicrobial therapy (1). This trend resulted in increased antimicrobial resistance and the pandemic spread of highly resistant pathogens.

For these reasons, currently used guidelines from the Surgical Infection Society (SIS) (2) and the Infectious Diseases Society of America (IDSA) (3) suggest diagnostic approach for microbiology, timing of initiation, recommended regimens according to severity of disease based on highly qualified evidences. These guidelines also recommend the course of 4 to 7 days of antimicrobial therapy in patients with adequate source control and positive clinical response. Recently, Sawyer *et al.* even published “Trial of short-course antimicrobial therapy for intraabdominal infections (STOP-IT)” (4), which concluded that clinical outcomes including recurrent intraabdominal infections were similar after 4-day antibiotic therapy compared to those after longer courses of therapy.

However, clinicians remain still in traditional manner to continue antimicrobial therapy until clinical evidences

become clear. This is why most of patients are treated with antibiotics in average duration of 10 to 14 days (5,6). Especially in critically ill patients, no concrete warrant is recommended except small series of single-center, retrospective studies (7-9).

In this respect, the DURAPOP randomized clinical trial conducted by Montravers *et al.* (10) handled clinical impact of short duration of antimicrobial therapy in critically ill patients with postoperative intraabdominal infections. The authors designed a multicenter, prospective, controlled, randomized study comparing 8-day antibiotic therapy to 15-day therapy. Two hundred and forty-nine enrolled patients with cIAIs admitted to intensive care units (ICUs) after adequate source control. The study suggested that the number of antibiotic-free days was higher in the 8-day arm (15 days in the 8-day arm *vs.* 12 days in the 15-day arm, $P < 0.0001$) corresponding on a 15% relative reduction in antibiotic exposure. However, the 45-day mortality rates and length of ICU stay did not differ between the two groups. Moreover, it did not detect any difference in the rates of emergence of multi-drug resistant bacteria except for *Pseudomonas aeruginosa* between the two groups.

Unlike previous reports (4,11) showing the effect of short-course treatment focused on patients with mild-to-moderate community-acquired peritonitis or appendicitis, this report included critically ill ICU patients with postoperative IAI. To apply short-course antimicrobial therapy in patients with extreme severity of illness, it suggested the definition of “short-course” was much longer

(8-day) than that of other studies.

As it is expected that shortening of the duration of antimicrobial therapy can reduce the emergence of MDR pathogens, this result might be disappointing in a way. Even though, the emergence of MDR bacteria can be influenced by various factors including spectrum or combination of agents as well as duration of therapy. Therefore, the superiority in emergence of MDR bacteria might not be obtained just by comparing duration of therapy.

In conclusion, short-course antimicrobial therapy is valuable to be considered in critically ill patients with postoperative IAIs corresponding with this trial. Nevertheless, the discontinuation should be decided depending on thorough understanding of controlling infectious source and each patient's status.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Laxminarayan R, Duse A, Wattal C, et al. Antibiotic resistance—the need for global solutions. *The Lancet Infectious Diseases* 2013;13:1057-98.
2. Mazuski JE, Tessier JM, May AK, et al. The Surgical Infection Society Revised Guidelines on the Management of Intra-Abdominal Infection. *Surg Infect (Larchmt)* 2017;18:1-76.
3. Solomkin JS, Mazuski JE, Bradley JS, et al. Diagnosis and management of complicated intra-abdominal infection in adults and children: guidelines by the Surgical Infection Society and the Infectious Diseases Society of America. *Clin Infect Dis* 2010;50:133-64.
4. Sawyer RG, Claridge JA, Nathens AB, et al. Trial of short-course antimicrobial therapy for intraabdominal infection. *N Engl J Med* 2015;372:1996-2005.
5. Riccio LM, Popovsky KA, Hranjec T, et al. Association of excessive duration of antibiotic therapy for intra-abdominal infection with subsequent extra-abdominal infection and death: a study of 2,552 consecutive infections. *Surg Infect (Larchmt)* 2014;15:417-24.
6. Samuelsson A, Isaksson B, Chabok A, et al. Changes in the aerobic faecal flora of patients treated with antibiotics for acute intra-abdominal infection. *Scand J Infect Dis* 2012;44:820-7.
7. Dupont H, Friggeri A, Touzeau J, et al. Enterococci increase the morbidity and mortality associated with severe intra-abdominal infections in elderly patients hospitalized in the intensive care unit. *J Antimicrob Chemother* 2011;66:2379-85.
8. Seguin P, Laviolle B, Chanavaz C, et al. Factors associated with multidrug-resistant bacteria in secondary peritonitis: impact on antibiotic therapy. *Clin Microbiol Infect* 2006;12:980-5.
9. Montravers P, Augustin P, Grall N, et al. Characteristics and outcomes of anti-infective de-escalation during health care-associated intra-abdominal infections. *Crit Care* 2016;20:83.
10. Montravers P, Tubach F, Lescot T, et al. Short-course antibiotic therapy for critically ill patients treated for postoperative intra-abdominal infection: the DURAPOP randomised clinical trial. *Intensive Care Med* 2018;44:300-10.
11. van Rossem CC, Schreinemacher MH, van Geloven AA, et al. Antibiotic Duration After Laparoscopic Appendectomy for Acute Complicated Appendicitis. *JAMA Surg* 2016;151:323-9.

Cite this article as: Kim IK, Lee JG. Antibiotic duration can be shortened in postoperative intra-abdominal infection. *J Thorac Dis* 2018;10(Suppl 26):S3182-S3183. doi: 10.21037/jtd.2018.07.93