Impact of inappropriate initial empiric antibiotic therapy and antimicrobial resistance on outcome of patients with complicated intra-abdominal infections requiring surgery: a prospective cohort study in Italy


Study design: Multicenter prospective observational cohort study

Objective: To evaluate the impact of inappropriate empiric therapy in patients undergoing surgery for complicated intra-abdominal infections (cIAI).

Methods: Setting: accrual at two clinical centres in Italy, from October 2009 to May 2011. Participants inclusion criteria were: (i) age > 18 years, (ii) complicated intra-abdominal infection (iii) requiring surgery (iv) fever or leukocytosis. Patients with underlying immunodeficiency or with life expectancy less than 30 days were excluded. Variables: the primary outcome was clinical success, defined as infection cure in response to combined initial antibiotic therapy plus surgery. Statistical methods: Univariable analysis was performed using the Chi square test for categorical variables and the Student's t test for continuous ones. Logistic regression models were used to identify the variables independently associated with clinical success. The chosen level of significance was 5% and the p values reported were 2 tailed. Results: Participants: 107 eligible patients had a mean age of 53 years (SD±18.8), 63% were male. Most patients had complicated appendicitis (24%), or intra-abdominal abscess (21%). Eighty-two pathogens were isolated from 38 patients (35.5%). Escherichia coli was the most frequently identified pathogen (21%). Main results: In 82 cases (77%) the initial antibiotic therapy was appropriate. Clinical success was observed in 74% (79/107) of the cases. Patients with appropriate initial antibiotic therapy had clinical success in 77% vs 64% in the inappropriate therapy group (OR 1.87, 95% CI 0.64-5.41; p= 0.2). At multivariable analysis among those with initial appropriate antibiotic therapy, clinical success was significantly associated with younger patient age (OR 1.1; 95% CI 1.0 - 1.3; p=0.02); localised cIAI (OR 10.0; 95% CI 1.0 - 50; p=0.05); and shorter duration of first line antibiotic treatment (OR 1.43; 95% CI 1.11-2.0; p=0.04). Patients with resistant isolates (n=17) had a longer mean duration of antibiotic therapy (19 vs. 12, p=0.04) and longer hospital stay compared with patients with sensitive strains (23 vs. 15, p=0.08). Conclusions: We report the results of the first prospective study on inappropriate antibiotic therapy and outcome of cIAI. A trend towards a better outcome in cIAI patients with appropriate initial therapy was observed. cIAI due to resistant strains required longer duration of therapy and hospital stay.