Risk factors for increased antimicrobial resistance: a retrospective analysis of 309 acute cholangitis episodes.

To assess the risk factors for increased antimicrobial resistance among Enterobacteriaceae representing the most common biliary pathogens. A retrospective analysis was conducted of 276 patients with acute cholangitis treated at a German tertiary centre between April 1996 and May 2009. The resistance patterns among Enterobacteriaceae isolated from blood/bile cultures were compared and related to age, sex, the genesis of the cholangitis and the type and number of previous interventional procedures [percutaneous transhepatic cholangiography (PTC)/endoscopic retrograde cholangiography (ERC)]. Univariate and multivariate generalized estimation equation models were used to compute ORs with corresponding 95% CIs for the binomial outcomes. According to the univariate analysis, patients undergoing stent therapy had a smaller proportion of Enterobacteriaceae with susceptibility to quinolones (ofloxacin/ciprofloxacin) (184/239 versus 205/221; P < 0.001) and to ceftriaxone (208/239 versus 209/222; P = 0.014). Logistic regression analysis revealed that the odds for acquiring ceftriaxone-resistant Enterobacteriaceae were 4-fold higher than in patients who had not undergone stent therapy (P = 0.039).
Furthermore, an increased number of interventional procedures (PTC/ERC) was associated with lower susceptibility. The odds for susceptibility to ampicillin, ampicillin/sulbactam, ceftriaxone, quinolones and co-trimoxazole decreased by 2%, 2%, 4%, 6% and 3%, respectively, per interventional procedure. Age, sex and type of interventional procedure displayed no significant relationship to the development of antimicrobial resistance. Stent therapy was found to be a risk factor for increased antimicrobial resistance in patients with acute cholangitis, particularly those who had undergone numerous interventional procedures prior to the onset of the cholangitis.