Influence of antibiotic consumption on the resistance of *Staphylococcus aureus* with an antimicrobial stewardship program in a tertiary hospital (2010-2016)

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Due to the widespread overuse of antibiotics, which can cause antibiotic resistance, China launched an antimicrobial stewardship programme in 2011. This study investigated the trends in and correlations between antibiotic consumption and resistance to *Staphylococcus aureus* at a tertiary hospital in China from 2010 to 2016. The trends in antibiotic consumption and resistance were analyzed by linear regression, while an autoregressive integrated moving average model was used to assess the correlations. After the antimicrobial stewardship programme, the consumption of total antibiotics has fallen by half, from 951.88 DDDs/1000 PDs(quarter 1, 2010) to 346.45 DDDs/1000 PDs(quarter 4, 2016). Meanwhile, the rate of nosocomial infection had a significant reduction. The resistant rates of *S. aureus* significantly decreased or remained stable, and the detection rate of methicillin-resistant *S. aureus* (MRSA) achieved a remarkable decline from 73.3% (quarter 1, 2010) to 41.4% (quarter 4, 2016). The decreased prevalence of MRSA was significantly correlated with the use of several classes of antibiotics. For example, the prevalence of MRSA would decrease immediately by 3.03 after increasing the usage of glycopeptides. In conclusion, the changes in antibiotic usage could be attributable to the antimicrobial stewardship programme setting specific targets for antibiotic use (400 DDDs/1000 PDs or less). The overuse of antibiotics was not beneficial to controlling nosocomial infection. The prevalence of MRSA was declined, which correlated the consumption of various antibiotics. The reasons for these correlations need to be explored and necessary corrective actions are taken to control antibiotic resistance.

Biography

Di Zhang is a Clinical Pharmacist at the First Affiliated Hospital of Xi'an Jiaotong University. From July 2011, the main work of Chinese pharmacists participates in an antibiotic application at the hospital. The contents were included doctor education, real-time monitoring of clinical records, and making recommendations. She has completed his Master in 2009 from Shandong University. She has published 10 papers in journals and has been serving as an Editorial Board Member.

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