**Detection of drug-induced antibodies based on β-lactam antibiotics and analysis for related hemolytic anemia**

Li Wang, Zengzhen Wei, Chunyan Huang, Bin Tan, Li Qin

Department of Transfusion Medicine, Sichuan University West China Hospital, Chengdu, P. R. China

Co-Corresponding author: Bin Tan, Li Qin; Department of Transfusion Medicine, Sichuan University West China Hospital; Chengdu, Sichuan Province, P.R. China; E-mail: [qinli7@126.com](mailto:qinli7@126.com), [tanbinhx@163.com](mailto:tanbinhx@163.com)

**ABSTRACT**

**Purpose:** Asβ-lactam antibiotics are widely used in the anti-infective therapy, we aimed to conduct a primary study of patients with those drugs who developed the related antibodies and drug-induced immune hemolytic anemia (DIIHA).

**Methods:** Obtain the antibiotic use of the inpatients in our hospital for 9 months, collecting the medication information and laboratory test results. Direct antiglobulin test (DAT) and drug-induced antibody detection are performed.

**Results:** Among the enrolled 4,040 patients, 27.45% were positive for DAT after medication, as only 9.25% with ceftriaxone, and over 25% with other three drugs respectively. The total rate of positive drug-induced antibody detection was 18.07%, as only 0.43% with ceftriaxone, and over 20% with the remaining three drugs severally. Patients with positive drug-induced antibody test results decreased in red blood cell (RBC) count, hemoglobin level, hematocrit and urea, but increased in bilirubin and lactate dehydrogenase (*P*< 0.05).

**Conclusion:** After treatment with the antibiotics, the incidence of positive DAT and drug-induced antibody detection in patients treated with ceftriaxone are both lower than the other three drugs. Patients who tested positive for drug-induced antibodies did not develop any symptoms or signs of hemolytic anemia, indicating that the β-lactam antibiotics especially piperacillin are relatively safe with rational administration.

**Key words:** Beta-lactam antibiotics; DIIHA; Drug-induced antibodies; DAT