

P-13

Anticoagulation complications in patients with mechanical heart valve replacements on warfarin therapy visiting emergency center

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Purpose: This study aims to analyze and evaluate the level of therapeutic control on bleeding complications and thromboembolism by INR (International Normalized Ratio) and TTR (% , time in therapeutic range) in patients with mechanical heart valves visiting emergency center.

Methods: Between November 2001 and October 2006, 560 patients have been operated and followed up at YS Cardiovascular Hospital in Korea. Among them, 83 patients with mechanical heart valve visited emergency center.

Results: There were 6 major thromboembolic events, 18 major bleeding events and 25 minor bleeding events in patients visiting emergency center. The mean INR was 2.11 ± 1.17 in all patients, 4.30 ± 13.29 in patients visiting emergency center, 6.07 ± 3.86 in patients with major bleeding, and 5.89 ± 2.80 in patients with minor bleeding complication. There was statistically significant difference between all patients in emergency center group and bleeding complication groups ($p = 0.001$ in patients with major bleeding, $p \leq 0.0001$ in patients with minor bleeding). However, there was no difference in TTR when the therapeutic target INR range was $1.8 \sim 3.0$ ($p = 0.730$). With risk analysis, serum albumin level was significantly low and weekly warfarin dose was significantly high in patients with bleeding complication ($p \leq 0.013$). Among 18 patients with major bleeding, 10 patients were related to drug interaction. There was no correlation between mechanical valve position and INR ($p = 0.0873$).

Conclusions: There was no statistically significant difference in TTR between all patients and patients with bleeding, meaning that there were many unknown factors of warfarin related to anticoagulation complications. To reduce anticoagulation related complications, close monitoring and systemic anticoagulation education should be offered by experienced and knowledgeable pharmacists.