Optimizing warfarin dosing: Pioneering a Malaysian protocol for heart valve replacement patients

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ABSTRACT

Introduction: Warfarin is the primary anticoagulant for patients undergoing valve replacement. Due to its narrow therapeutic index, it requires frequent INR monitoring. However, there is no standard protocol for initiating warfarin post-heart valve replacement (HVR). **Objective:** This study aims to determine the optimal warfarin initiation dose to achieve target therapeutic INR in post-HVR patients. **Materials and Methods:** A retrospective cohort study was conducted at a tertiary hospital's cardiothoracic ward from January 1, 2018, to December 31, 2021. We included patients aged 18 and older who were admitted for valve replacement. Data were collected from electronic medical records, and descriptive statistics, chi-square or Fisher's exact tests for categorical variables, and t-tests or Mann–Whitney U tests for continuous variables were used, with significance set at $P < 0.05$. Analyses were performed using SPSS version 21.0. **Results:** Of 200 HVR patients, 111 were included. The average age was 44.46+10.5 years, with 53% male (n=59). The majority is Malay (71%), followed by Chinese (18%) and Indian (16%). Valve replacements included 31.5% aortic, 55% mitral, and 14% both. Most (74%) had mechanical valves, and 81.08% received enoxaparin as bridging therapy post-operation. The mean dose (SD) for warfarin were 2.08+0.79 mg in the 1st week and 3.01+1.5 mg in the 2nd week. INR values averaged 1.68+0.50 in the 1st week and 1.97+0.52 in the 2nd week. Only 14 patients met the INR target in the 1st week, compared to 30 in the 2nd week. Chinese patients had lower initiation doses; 1.99 mg+1.09 (1st week) and 2.76 mg+0.63 (2nd week), than Indian patients (2.57+1.04 mg and 2.60+2.51 mg, respectively). The mean INR achieved in 1st week was 1.6 (p=0.18), and in 2nd week was 1.9 (p=0.68). In addition, initiation doses of warfarin were lower in MVR and highest in those who underwent both AVR and MVR, 1.84+0.66 mg and 2.65+1.51 mg in 1st and 2nd week respectively. **Conclusion:** This study provides insight into the various warfarin initiation doses used in this hospital for post HVR patients. This study shows that the average warfarin initiation doses were 2 mg in the 1st week and 3 mg in the 2nd week. Bridging therapy with enoxaparin helped achieve target INR faster than warfarin monotherapy.