BAYESIAN META-ANALYSIS IDENTIFIES THE INTERVENTIONAL ADVANCES RESPONSIBLE FOR THE DIMINISHED BLEEDING ADVANTAGE OF BIVALIRUDIN OVER HEPARIN

Poster Contributions
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Authors: John A. Bittl, Munroe Regional Medical Center, Ocala, FL, USA, FL, USA

Background: New evidence suggests that the bleeding advantage of bivalirudin over heparin seen in older trials has diminished. The current analysis identifies the new advances in percutaneous coronary intervention responsible for mitigating the hemostatic advantage of bivalirudin.

Methods: We used data from 18 randomized trials of 44,700 patients, of whom 5,072 underwent the transradial approach, 2,964 received a novel P2Y12 platelet inhibitor, 10,229 received ≤60 units heparin/kg; but 2,246 experienced major bleeding and 191 had definite stent thrombosis. Using Bayesian approaches, we used a normalizing factor \( \alpha \) to down-weight older studies to identify advances that account for reduced bleeding differences.

Results: Overall, the risk of major bleeding was lower (posterior mean odds ratio [OR] 0.59, 95% Bayesian credible interval [BCI] 0.46-0.74) but the risk of definite ST was higher (OR 1.74, 95% BCI 1.21-2.49) after using bivalirudin in place of heparin. An unweighted conjugate-normal model integrating results of older trials and new trials and using \( \alpha=1.0 \) showed a persistent hemostatic advantage of bivalirudin (Figure). Older studies had to be down-weighted by 90% (\( \alpha=0.10 \)) to 99% (using \( \alpha=0.01 \)) to neutralize the bleeding advantage of bivalirudin, but this produced no effect on the risk of ST.

Conclusion: The use of the transradial approach, novel P2Y12 platelet inhibitors, and low-dose heparin may have mitigated the bleeding advantage of bivalirudin over heparin in contemporary trials.