

Delayed Posttraumatic Intracranial Hemorrhage in Patients on Anticoagulant/antiplatelet Medications: Three Year Experience

PURPOSE

The risk of delayed post-traumatic intracranial hemorrhage (DH) in patients on anticoagulant/antiplatelet medications, especially patients on direct oral anticoagulant medications (DOAC), is not well established. The prevalence of DOACs is increasing and in a recent study on anticoagulated patients was as high as 50%. In our study, a majority of anticoagulated patients were taking DOACs. Some groups found a low risk of posttraumatic DH in patients taking warfarin/clopidogrel, however, newer reports have found >7% rate of DH and others found 1% mortality. We report our 3-year experience with DH including patients taking DOACs.

METHODS AND MATERIALS

This study was performed under the supervision of the local Institutional Review Board. Patients were included in the study if they were on antiplatelet and anticoagulant medications, including DOACs, and suffered head trauma. The radiology reports for the initial examinations on these patients included a recommendation for repeat imaging to evaluate for DH. Approximately 50% of patients in which repeat imaging was recommended received repeat imaging. Repeat examinations were typically performed within 24 hours (average follow-up time was 21 hours and 99% were within 3 days). Patients who had repeat examinations within the same hospitalization/incident were included in the study if their initial examination was interpreted as negative and there were no additional instances of trauma between the examinations. All positive studies were reviewed by two board certified neuroradiologists. Patients were excluded from the study if hemorrhage was retrospectively identified on the initial examination. Cases were reclassified as negative if hemorrhage on the follow-up examination was thought to be not present or thought to be artifactual. Cases were considered positive if the initial examination was considered negative and the follow-up examination demonstrated new hemorrhage.

RESULTS

A total of 1,046 patients were included in the study, with 1.8% incidence of DH and 0.4% overall mortality. Patients on warfarin and clopidogrel had a higher rate of DH (3.2%), compared to 0.9% in the DOAC group, and the difference was statistically significant ($p < 0.01$). All deaths were in the clopidogrel/warfarin group.

CONCLUSIONS

Our study found 1.8% rate of DH with 0.4% mortality, higher than some previously published reports. DOACs demonstrated significantly lower risk of both DH and mortality than warfarin/clopidogrel.

CLINICAL RELEVANCE/APPLICATION:

Patients on clopidogrel and warfarin had both significantly higher rate of DH and mortality from DH compared to patients taking DOACs. Repeat head CT should be considered on trauma patients on anticoagulant/antiplatelet medications, especially warfarin and/or clopidogrel.