Association of Antithrombotic Drug Use With Subdural Hematoma Risk

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IMPORTANCE Incidence of subdural hematoma has been reported to be increasing. To what extent this is related to increasing use of antithrombotic drugs is unknown.

OBJECTIVES To estimate the association between use of antithrombotic drugs and subdural hematoma risk and determine trends in subdural hematoma incidence and antithrombotic drug use in the general population.

DESIGN, SETTING, AND PARTICIPANTS Case-control study of 10 010 patients aged 20 to 89 years with a first-ever subdural hematoma principal discharge diagnosis from 2000 to 2015 matched by age, sex, and calendar year to 400 380 individuals from the general population (controls). Subdural hematoma incidence and antithrombotic drug use was identified using population-based regional data (population: 484 346) and national data (population: 5.2 million) from Denmark. Conditional logistic regression models were used to estimate odds ratios (ORs) that were adjusted for comorbidity, education level, and income level.

EXPOSURES Use of low-dose aspirin, clopidogrel, a vitamin K antagonist (VKA), a direct oral anticoagulant, and combined antithrombotic drug treatment.

MAIN OUTCOMES AND MEASURES Association of subdural hematoma with antithrombotic drug use, subdural hematoma incidence rate, and annual prevalence of treatment with antithrombotic drugs.

RESULTS Among 10 010 patients with subdural hematoma (mean age, 69.2 years; 3462 women [34.6%]), 47.3% were taking antithrombotic medications. Current use of low-dose aspirin (cases: 26.7%, controls: 22.4%; adjusted OR, 1.24 [95% CI, 1.15-1.33]), clopidogrel (cases: 5.0%, controls: 2.2%; adjusted OR, 1.87 [95% CI, 1.57-2.24]), a direct oral anticoagulant (cases: 1.0%, controls: 0.6%; adjusted OR, 1.73 [95% CI, 1.31-2.28]), and a VKA (cases: 14.3%, controls: 4.9%; adjusted OR, 3.69 [95% CI, 3.38-4.03]) were associated with higher risk of subdural hematoma. The risk of subdural hematoma was highest when a VKA was used concurrently with an antiplatelet drug (low-dose aspirin and a VKA: 3.6% of cases and 1.1% of controls; adjusted OR, 4.00 [95% CI, 3.40-4.70]; clopidogrel and a VKA: 0.3% of cases and 0.04% of controls; adjusted OR, 7.93 [95% CI, 4.49-14.02]). The prevalence of antithrombotic drug use increased from 31.0 per 1000 individuals from the general population in 2000 to 76.9 per 1000 individuals in 2015 ($P < .001$ for trend). The overall subdural hematoma incidence rate increased from 10.9 per 100 000 person-years in 2000 to 19.0 per 100 000 person-years in 2015 ($P < .001$ for trend). The largest increase was among older patients (>75 years; n = 4441) who experienced an increase from 55.1 per 100 000 person-years to 99.7 per 100 000 person-years ($P < .001$ for trend).

CONCLUSIONS AND RELEVANCE In Denmark, antithrombotic drug use was associated with higher risk of subdural hematoma; and the highest odds of subdural hematoma was associated with combined use of a VKA and an antiplatelet drug. The increased incidence of subdural hematoma from 2000 to 2015 appears to be associated with the increased use of antithrombotic drugs, particularly use of a VKA among older patients.

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Supplemental content

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