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ANTICOAGULANT TREATMENT

URINE QUALITATIVE ASSESSMENT OF DIRECT ORAL ANTICOAGULANTS IN ROUTINE CLINICAL PRACTICE

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Introduction. DOACs have predictable pharmacokinetics and pharmacodynamics; however, measuring DOAC levels can be relevant in certain conditions (i.e., suspected drug-drug interactions, extreme body weight, treatment failure, liver or renal insufficiency), especially in cancer patients. Information is available with plasma measurement of DOACs, while experience with qualitative urinary testing is limited.

Aim. To evaluate the reliability of qualitative urinary detection by DOASENSE Dipstick (Harenberg et al, TH 2024) compared to the corresponding plasma testing of anti-Xa and anti-IIa anticoagulant drugs in patients enrolled in an ambulatory setting.Materials and Methods: Patients on a steady DOAC treatment were included. Reasons for DOACs' prescription were recorded. Drug levels were measured at the trough and peak of DOAC intake, in both urine (qualitative DOASENSE Dipstick test) and plasma samples (quantitative assays, Stago STA-R Max).

Results. A total of 264 (169M/95F) consecutive patients, with a median age of 68 years, were studied. Most patients were receiving DOACs for non-valvular atrial fibrillation (AF, n=145), followed by venous thromboembolism (VTE, n= 119), of whom 39% were cancer-associated VTE. The prescribed DOACs were rivaroxaban (18%), dabigatran (23%), edoxaban (26%), and apixaban (33%). Requests for DOACs measurement were extreme body weight (8%), thrombosis recurrence (13%), bleeding or suspected overdose (11%), renal failure (6%), hepatic impairment (2%), suspicion of pharmacological interaction (46%), other reasons (5%). Plasma concentrations at trough were 15.5 ng/mL (IQR 5.5-33.8), 21 ng/mL (14.5-34.8), 85 (60.8-110), and 104 ng/mL (82.5-200) for rivaroxaban, edoxaban, apixaban, and dabigatran, respectively. Likewise, DOAC concentrations at peak were 121 ng/mL (69.5-185) for rivaroxaban, 201 ng/mL (40-319) for edoxaban, 177 ng/mL (103-215) for apixaban, and 155 ng/mL (122-211) for dabigatran. At peak, urine DOAC detection was positive in all patients; at trough, it was positive in all but one.

Conclusions. The qualitative analysis of DOACs showed a remarkable 99% concordance with the corresponding quantitative measurements across various clinical monitoring scenarios. This level of agreement underscores the utility of a rapid qualitative assessment tool, the validation of which in emergency situations would improve medical decision-making in acute care setting.