

TEV E PATOLOGIE CARDIOVASCOLARI

THE UTILITY OF URINE QUALITATIVE ASSESSMENT FOR DIRECT ORAL ANTICOAGULANTS IN ROUTINE CLINICAL PRACTICE.

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Background and aims: Direct Oral Anticoagulants (DOACs) are increasingly prescribed in clinical practice because of their predictable pharmacokinetic and pharmacodynamic profiles. However, measuring DOAC levels can be relevant in some conditions, such as suspicion of drug-drug interaction, extreme body weight, treatment failure, liver or renal insufficiency. In this regard, some information is available with plasma measurement of DOACs, while there is still a significant gap in knowledge concerning qualitative urinary testing.

In this study we want 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.

Methods: Patients receiving long-term DOACs referred to our outpatient thrombosis clinics were included. Reasons for DOACs' prescription and measurement request were recorded. Drug levels were measured at the trough and peak of DOAC intake, in both urine sample (qualitative DOASENSE Dipstick test) and corresponding plasma sample (quantitative Anti-Xa and Anti-IIa assays, Stago STA-R Max).

Results: A total of 264 (169M/95F) consecutive patients, with a median age of 68 years (range: 20-94 years) were studied. Most patients were receiving DOACs for non-valvular atrial fibrillation (AF, n=145), followed by venous thromboem-

bolism (VTE, n= 119), of whom 39% were cancer-associated VTE. Women were characterized by a more frequent prescription of DOAC for FA than men ($p= 0.016$). 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 concentration at trough was 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 concentration at the peak was 121 ng/ml (69.5-185) for rivaroxaban, 201 ng/ml (40-319) for edoxaban, and 177 ng/ml (103-215) for apixaban, 155 ng/ml (122-211) for dabigatran. At peak, the detection of urine DOACs was positive in all patients, at trough, was positive in all but one patient.

Conclusions: The qualitative analysis of direct oral anticoagulants (DOACs) demonstrated 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 conditions would help to enhance medical decision-making in acute care indications.

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