



The importance of point-of-care testing for direct oral anticoagulants in bleeding patient with an unclear medical history



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AIM

To present the genuine benefits of using point-of-care tests - DOAC Dipstick® and ClotPro® for screening of DOAC's treatment in a patient admitted to the emergency department.

BACKGROUND

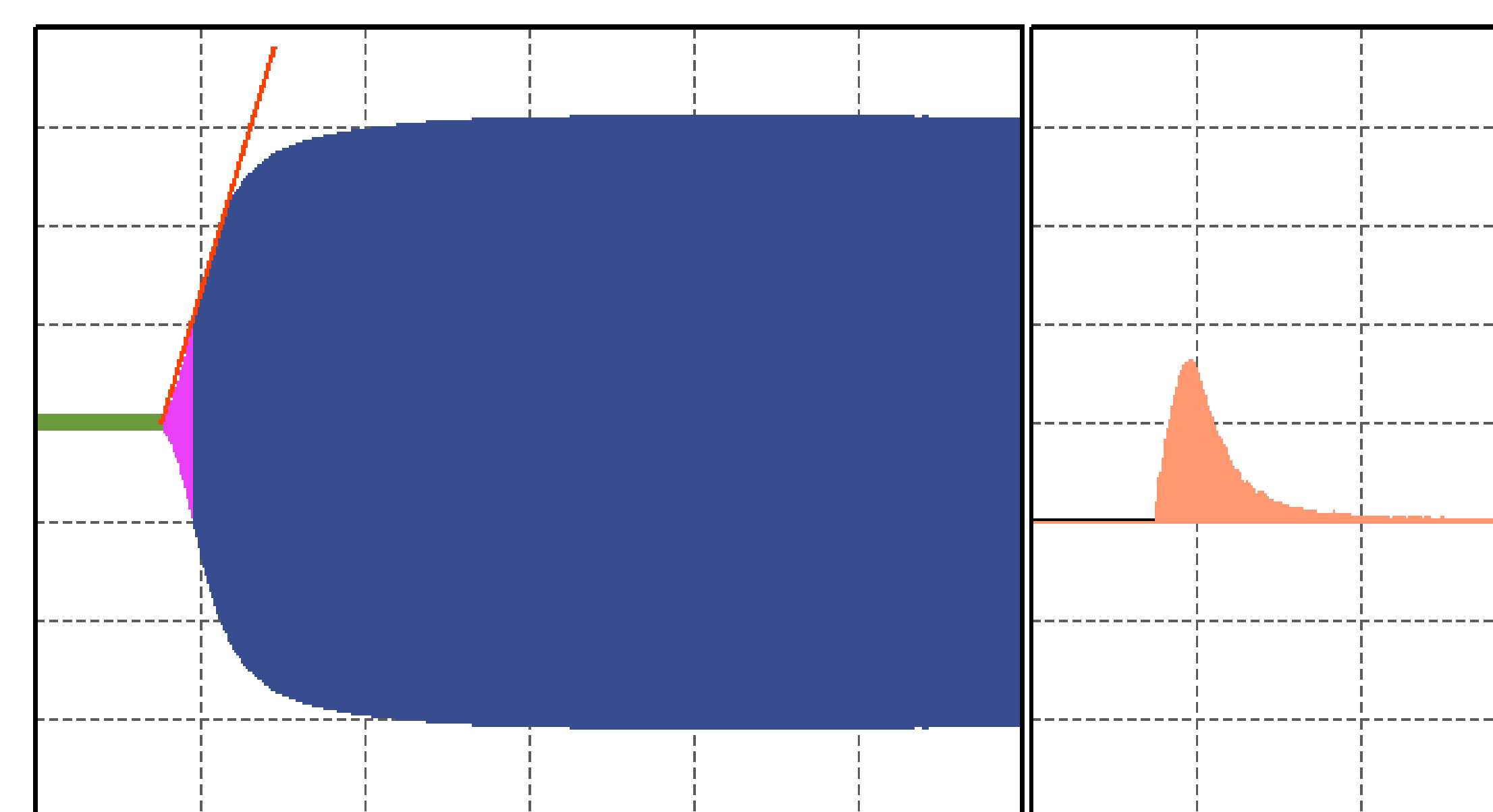
- The use of DOACs can cause or deteriorate bleeding [1].
- In patients with a lack of medical history fast detection of the presence of DOACs in the patient is essential often.
- We have several new opportunities that allow us to detect the presence of DOACs in patient's body.
- One of the new point-of-care tests is the ClotPro® device based on the viscoelastic method and the other is the DOAC Dipstick® based on analysis of urine sample.
- The ClotPro® device offers to perform ECA-test and RVV-test that can detect factor Xa inhibitors and thrombin inhibitor in the blood [2].
- The DOAC Dipstick® is a point-of-care dipstick test that is used to detect factor Xa inhibitors and thrombin inhibitor in urine. The detection of DOACs is based on color-changing chemical reactions that occur on the surface of test pads [3].
- Both of these point-of-care tests can detect DOACs in the body in 10-15 minutes with high sensitivity and specificity [4, 5]. We use these point-of-care tests in the emergency department for trauma, bleeding, and stroke patients to exclude the influence of DOACs on coagulation.

METHODS

- We analyzed a case of a confused patient with intracerebral hemorrhage.
- This patient was specific by unclear medical history caused by his confusion and ambiguous medical records.
- According to this incomplete information, it was suspected that the patient was treated with dabigatran or apixaban because he was currently being switched from one drug to another.
- Therefore, we performed the point-of-care testing by DOAC Dipstick®, ClotPro® and conventional laboratory tests.
- We analyzed the results of point-of-care tests and conventional coagulation tests and then identified the advantages and disadvantages of each method.

ECA-test

CT 461s (68 - 112)
A5 49mm (45 - 60)
A10 58mm (54 - 66)
A20 61mm (59 - 70)
MCF 62mm (61 - 72)
CFT >113s (60 - 90)
LT >0s



RVV-test

CT 281s (49 - 79)
A5 46mm (40 - 55)
A10 53mm (49 - 63)
A20 53mm (53 - 67)
MCF 54mm (53 - 69)
CFT >63s (35 - 85)
LT >0s

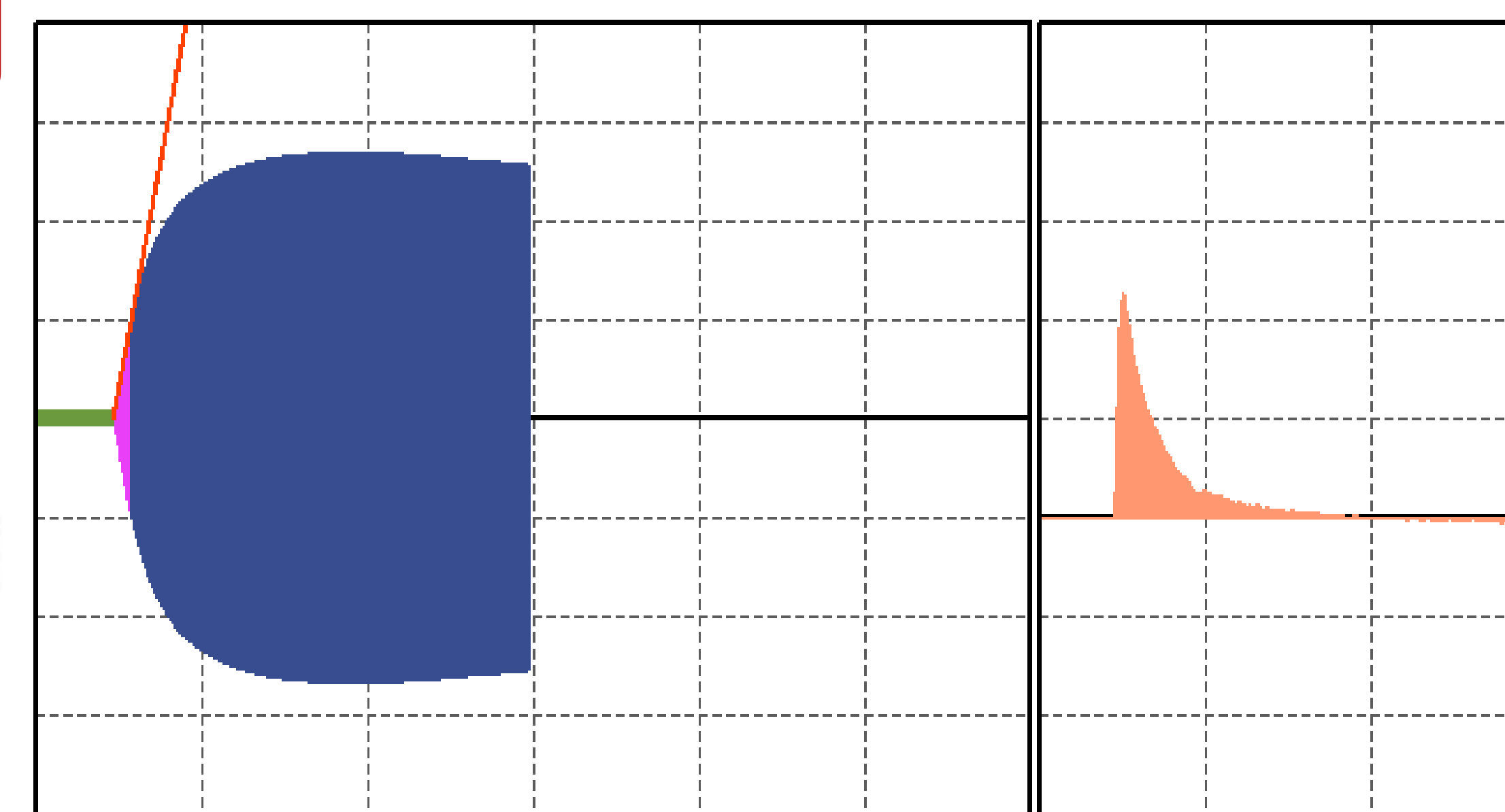


Fig.1: ClotPro® - results of ECA-test and RVV-test

RESULTS

- DOAC Dipstick® read by DOASENSE Reader® discovered **positivity in thrombin inhibitor, negativity in factor Xa inhibitor**, and normal level of creatinine in **13 minutes**.
- The ClotPro® device detected prolongation in clotting time in **ECA-test (461s) and RVV-test (281s) thus proved use of thrombin inhibitor**. This result was available in **15 minutes**.
- The CT scan showed **spontaneous intracerebral hemorrhage** in 17 minutes.
- The laboratory testing showed values of INR 1.47, aPTT-R 1.67, Fibrinogen 3.35 in 23 minutes.
- The laboratory testing proved that the blood level of **dabigatran was 239 µg/L and 8 µg/L of apixaban in 39 minutes**.
- Based on the results of point-of-care tests, **idarucizumab was administered after 20 minutes after admission of patient to the emergency department** to antagonize the effect of dabigatran and stop the bleeding.

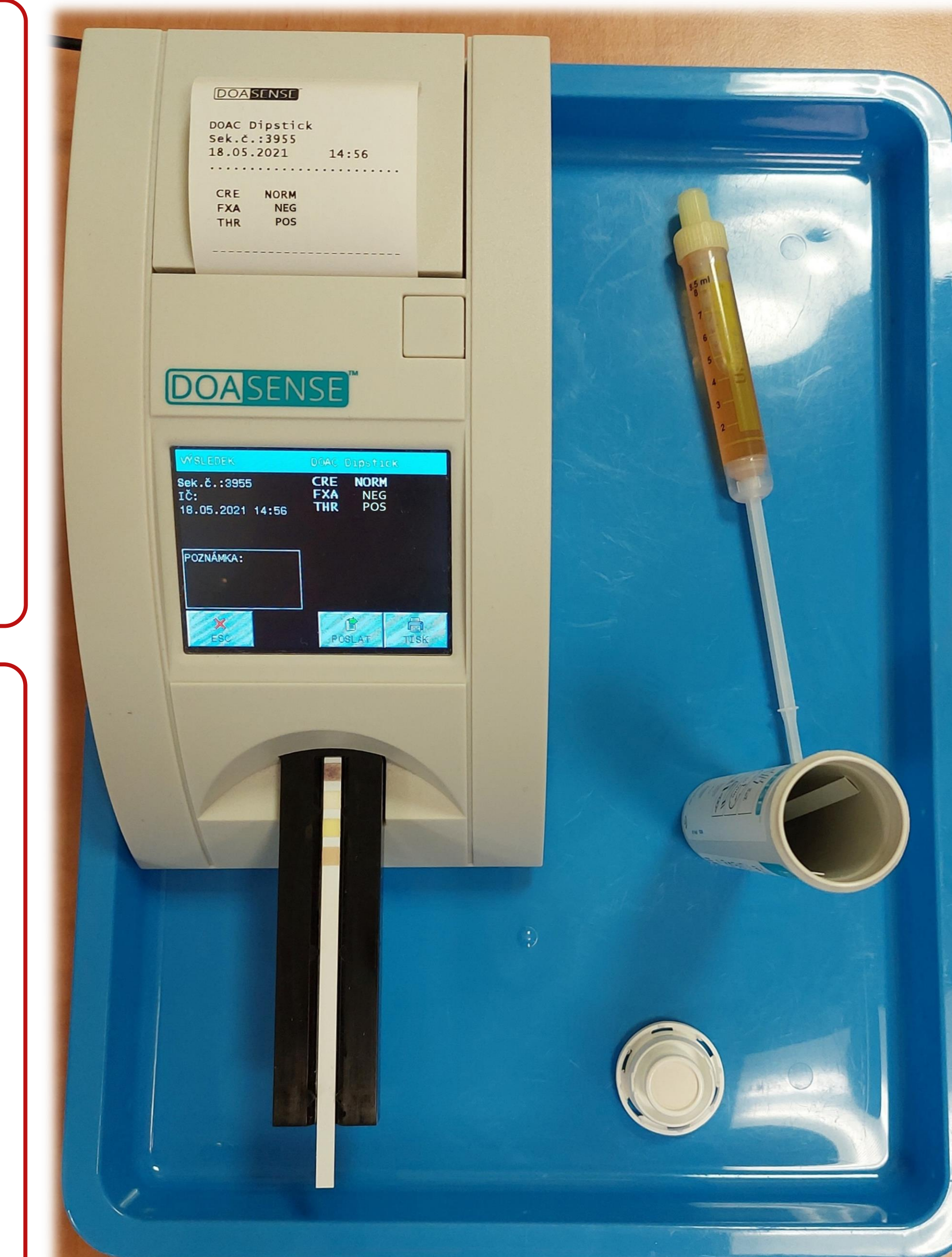


Fig.2: Evaluation of the DOAC Dipstick® on DOASENSE Reader®

CONCLUSION

- **It is important to perform DOAC's tests in bleeding or stroke patients with an unclear medical history and suspicion of DOAC's treatment.**
- **With these tests, we can significantly influence and focus our treatment.**
- **Point-of-care tests are time-saving and more versatile than conventional laboratory tests.**

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