- Many factors must be taken into account in interpreting the RAT, in particular the type of symptoms and the time from illness onset.

Predictive negative value of the COVID-19 rapid antigen test

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Background:
Testing is a crucial tool in the pandemic response to identify and confirm COVID-19 in those who are symptomatic. The aim of the present study was to assess the negative predictive value (NPV) of COVID-19 Rapid Antigen Testing (RAT) according to the symptoms, test timing in relation to symptom onset and characteristics of the person.
Methods:
We performed a prospective cohort study of patients attended the COVID-19 testing center at the university hospital of Monastir, between 23 November 2020 and 19 April 2021. In the first time we performed the COVID19 RAT. In the second time, if this result was negative we performed the reverse transcription polymerase chain reaction (rRT-PCR). The NPV was conducted with SPSS software, version 21.0. A logistic binary regression was performed to determine factors affected the NPV of COVID-19 RAT. A p value of < 0.05 was considered statistically significant.
Results:
A total of 855 tests were performed, of which 807 were RAT and 467 rRT-PCR. Positive RAT test was found in 336 cases (39%). False negative RAT was noted in 87 cases (10.2%). The NPV of RAT was 83.6%. The NPV ranged between 80% and 88% for the following symptoms: fever, cough, myalgia, dyspnea, dizziness, asthenia, headache, myalgia, odynophagia, flu_rhume. It varied from 64.2 to 77.8 for Ageusia, Anosmia, Arthralgia, chest pain, thrill, digestive signs. The NPV was equivalent according to age and gender. The NPV varied from 80 to 100% if the test was applied between the first and the 5th day for the onset of symptoms. Beyond this duration, it decreased to 50%. A long period of symptom onset (>5 days) increased significantly the risk of false negative RAT (OR = 2.57 IC95%: [1.38-4.82], p = 0.003).
Conclusions:
Many factors may affect the performance of COVID-19 Rapid Antigen Testing (RAT). In fact, negative RAT should be completed by a rRT-PCR according to the the type of symptoms and the time from illness onset.
Key messages:
- False negative RAT rate was high.