



DIAGNOSIS OF INVASIVE ASPERGILLOSIS: COMPARISON OF METHODS

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INTRODUCTION

Early diagnosis is one of the main obstacles to timely treatment of Invasive Aspergillosis (IA). The aim of this work, which is part of a multicentre study, was to evaluate the performance of the Aspergillus ELITe MGB® test in detecting Aspergillus spp. DNA in patients with suspected IA according to EORTC/MSG criteria.

METHODS

Between 2021 and 2023, at the AUSL Piacenza, twenty-seven patients were enrolled. Twenty-four serum and twenty-seven respiratory samples were evaluated for the Aspergillus galactomannan (GM) antigen with Aspergillus EIA-VirCLIA (Vircell). Respiratory samples were cultured on Sabouraud Dextrose Agar and incubated at 30°C for 21 days. The totality of serum samples and 24 respiratory samples were analysed with Aspergillus ELITe MGB® on the ELITe InGenius platform (ElitechGroup S.p.A., Turin, Italy); RT-PCR results were considered positive when the Aspergillus DNA copies/mL were >120 for respiratory samples and >50 for serum samples. Descriptive statistical analysis was performed with the STATA program.

RESULTS

| | | | | | | | | | _ | | _ | | | | |
|--|--------------------|-------------------|---------------|---|-----------------|-------------------|---------------|------------------|------------------------|---|------------------|----------------------------|------------------------------------|---|---|
| ~ | | | | | | Cult | | ture | | | | | Culture | | |
| | | | | Molecular test on respiratory | Sensitivity | (%) | | 95%CI | Э. | \$88888 C. | | (| Julture | 5 | |
| x | | 0 | | | | 100 | 63.1 | 100 | - 8 | State Conce | | Positiv | | ogativo | |
| | 1.10 | | \Rightarrow | | Specificity | 56.3 | 29.9 | 80.2 | 200 | SAMPLES | | 031111 | | egative | |
| 1000 | VS | | | | PPV | 53.3 | 26.6 | 78.7 | | 200 | | 10 | | 17 | |
| | | | | sample | NPV | 100 | 66.4 | 100 | _ | () | _ | | _ | | |
| | | | p=0.009 | | ROC Area | 0.781 | 0.656 | 0.907 | | ala | | 1 | | | |
| | | | | | Agreemer | nt: 70,83% | | | | 200 | | | | | |
| | | D | \implies | | | Cul | | lture | | MIMIM | | | | A. flavus | /us/A.terreus |
| 1 | VS | | | Molecular test on | | (%) | | 95%CI | | Molecular test on | | | 2 | ٨ | |
| | | | | | Sensitivity | 25 | 3.19 | 65.1 | re | spiratory sample | | | 3 | A. [| uvus |
| | | | | | Specificity | 100 | 15.0 | 100 | | 10 S | | | 3 | A fun | nigatus |
| | | | p=0.04 | serum | NDV | 100 | 15.8 | 100 | | | | | - | 7 | ngutuo |
| | | | | | ROC Area | 0.625 | 0.465 | 0.785 | | MIMIM | | | 2 | A. fumigo | atus/flavus |
| | | | | | NOCHIEU | 0.025 | 0.403 | 0.705 | | Molecular test on serum sample | | | | | |
| | | | | Agreeme | | ent : 75% | | | | T | | | | A. 1 | . niger |
| 1 | | Sem | | 1 | | Galattomannar | | n Ag_Respiratory | | 20 | | | | | |
| | VS | GM Ag | p=0.012 | | | (%) | | 95%CI | | | | | | | |
| MIXIM | | | | Molecular test on respiratory sample | Sensitivity | 75 | 50.9 | 91.3 | G | Ag GM Galactomannan Ag on respiratory sample | | | | PCR | |
| | | | | | Specificity | 100 | 39.8 | 3 100 | | | a | nre | | | |
| | | | | | PPV | 100 78 44.4 13 | 78.2 | 2 100 | | | Ľ, | | | Non- | Not |
| | | | | | NPV ROC Area | | 13.7 | / /8.8 | | | 르 | N | P | significant | - aufauma d |
| | | | | | Agreeme | 0.675 | 0.77 | 0.972 | | | ŭ | | | positive | periormed |
| | | | | | Agreeme | ent . 79.1776 | | | | Ag GM | - | | | • | |
| R | VS | 1 A | p=0.01 | p | | (%) | | nan Ag_Serum | | on serum sample | N | 6 | 7 | 3 | |
| | | | | Molecular test on serum | Sensitivity | 66.7 | 9.43 | 99.2 | | | P | 0 | 8 | 0 | 2 |
| | | | | | Specificity | 100 | 83.9 | 100 | | D | | | | | |
| | | | | | PPV | 100 | 15.8 | 100 | | Culture | | | | | |
| M | | | p 0.01 | sample | NPV | 95.5 | 77.2 | 99.9 | | | | | | | |
| | | GM Ag | | | ROC Area | 0.833 | 0.50 | 7 1 | | | | | | | |
| | Agreement : 95.83% | | | | | | | | | GM Ag | 0 | - | | Colonization | v/infection cut-off |
| | | | | | | | | 1 | | (3 | samples) | | PCR | | Clinical evaluation |
| | | | | | | | | | | | - | | _ | | and other diagnostic tests |
| | | | | | | | | Bronchial | | | • | \Rightarrow | STOP S | linical evaluation and ther diagnostic tests | |
| | | | | | | | | aspirate/ | | | | | - | 17 | |
| | | | | | | | | Bronchoalveolar | \Rightarrow | Culture | 0 | | olonization/in linical evaluati | fection ? on and other diagnostic te | ests |
| CONC | LUS | SION | | | | | | lavage | | | • | | | Colonization/infe | ection cut-off |
| | | | | | | 0 | \Rightarrow | PCR | | | | | | | |
| The resu | phighted excel | | | | | | | STOP | other diagnostic tests | | | | | | |
| | | | | | | | | Suspicion of | | DCP | 0 | | Culture | - | |
| | | | | | | | | Invasive | | Coloniza | tion/infection c | ut-off | culture | Drug sensitivity testing | |
| respiratory specimen, and support the indication to use | | | | | | | | Aspergilosis | | 00000.000 | 0 | \Rightarrow | STOP | Clinical evaluation and | |
| GM as a screening test, followed by molecular | | | | | | | | | | | - | | - | other diagnostic tests | |
| confirmation of positive cases for better diagnostic | | | | | | | | | | GM Ag | 0 | - | G | Colonization/infection | on cut-off |
| specificity. These preliminary results require to be | | | | | | | | | | 6 | samples) | | Ск С | STOP Cli | inical evaluation and her diagnostic tests |
| evaluated on a larger sample population. It will also be | | | | | | | | | | | | - | Clini | cal evaluation and | and angliostic tests |
| necessary to further investigate the clinical correlations | | | | | | | | Serum | \Rightarrow | | - | -> § | othe | rdiagnostic tests | |
| necessary | y ιο π | ur urier investig | ate the CIII | | | | | | | | | - | | | |
| Detween laboratory data and EOK I C/MSG definitions. | | | | | | | | PCR | • | | nd other diagn | on ostic + Colonization | √infection cut-off | | |
| | | | | | | | | | | | | te | | | |
| | | | | | | | | | | | 0 | | STOP Clir oth | ical evaluation and er diagnostic tests | |