OPEN ACCESS Freely available online

ISSN: 0974-8369
Biology and Medicine

Commentary

Overview on Diagnostic Procedures for COVID-19

Aaron Farberg*

Division of MicroBiology, University of Texas, Texas, United States of America

DESCRIPTION

The emergence of the COVID-19 pandemic has created a public health emergency worldwide. It is caused by a novel coronavirus named SARS-CoV-2 (Severe Acute Respiratory Syndrome Coronavirus 2). The clinical manifestations can range from asymptomatic cases to severe acute respiratory syndrome and fatal pneumonia. Early detection and diagnosis are essential for controlling the spread of the disease and providing appropriate medical care to infected individuals. The diagnostic procedures of COVID-19 include laboratory-based tests, imaging studies, and clinical assessment.

The laboratory-based tests include molecular diagnostic tests and serological assays. Molecular diagnostic tests detect the genetic material of the virus in respiratory samples obtained from patients, such as nasopharyngeal swabs, sputum, or bronchoalveolar lavage fluid. Polymerase Chain Reaction (PCR) is the most common molecular diagnostic test used for its detection. The PCR test amplifies the viral RNA and detects it by fluorescence-based detection methods. Several commercial PCR-based tests are available for COVID-19 diagnosis, including the Abbott RealTime SARS-CoV-2 assay, Roche cobas SARS-CoV-2 test, and Thermo Fisher Scientific TaqPath COVID-19 Combo Kit. Another molecular diagnostic test for COVID-19 is the Loop-Mediated Isothermal Amplification (LAMP) assay. The LAMP test amplifies the viral RNA at a constant temperature and can provide results within 30 minutes. The LAMP assay is less sensitive than PCR but has the advantage of being a simple and rapid test suitable for point-of-care settings.

Serological assays detect the antibodies produced by the immune system in response to the SARS-CoV-2 virus. Serological assays can be used for detecting past infections or monitoring the immune response to COVID-19 vaccination. The two main types of serological assays are Enzyme-Linked Immunosorbent Assay (ELISA) and Lateral Flow Immunoassay (LFIA). ELISA tests are more sensitive and specific than LFIA tests but require laboratory equipment and trained personnel. LFIA tests are rapid and easy to perform but have lower sensitivity and specificity than ELISA tests. LFAs are rapid, point-of-care tests that can be performed in a doctor's office or clinic. They provide results in as little as 15 minutes but are less sensitive than ELISAs. ELISAs take longer time and require specialized equipment. Each test has its strengths and weaknesses and healthcare providers must consider several factors when selecting the most appropriate test for their patients. Ongoing research and development in this field are essential to improve the accuracy, speed, and availability of COVID-19 diagnostic procedures.

Imaging studies can help in the diagnosis and management of infected patients. Chest radiography and Computed Tomography (CT) are the two most common imaging modalities used for COVID-19 diagnosis. Chest radiography can detect the characteristic findings of this disease, such as bilateral interstitial and alveolar infiltrates, but has low sensitivity and specificity. It can detect the typical ground-glass opacities and consolidations seen in COVID-19 pneumonia and has higher sensitivity and specificity than chest radiography. However, this should be used rarely due to the risk of radiation exposure and the limited availability of CT scanners.

Clinical assessment is also an essential component. The clinical presentation of this disease can range from asymptomatic or mild disease to severe acute respiratory syndrome and multi-organ failure. The typical symptoms include fever, cough, dyspnea, fatigue, myalgia, and anosmia. However, some patients may present with atypical symptoms, such as gastrointestinal symptoms, headache, or confusion. COVID-19 should be suspected in patients with a history of these symptoms.

Correspondence to: Aaron Farberg, Division of MicroBiology, University of Texas, Texas, United States of America, E-mail: aarons.berg@gmail.com

Received: 27-Mar-2023, Manuscript No. BLM-23-20951; **Editor assigned:** 30-Mar-2023, Pre QC No. BLM-23-20951 (PQ); **Reviewed:** 14-Apr-2023, QC No. BLM-23-20951; **Revised:** 21-Apr-2023, Manuscript No. BLM-23-20951 (R); **Published:** 28-Apr-2023, DOI: 10.35248/0974-8369.23.15.560.

Citation: Farberg A (2023) Overview on Diagnostic Procedures for COVID-19. Bio Med. 15:560.