ICU
MANAGEMENT & PRACTICE

## Diagnostic approaches for hospital-acquired pneumonia

A new study suggests that a comprehensive approach might be undertaken for microbiological diagnosis in critically ill non-ventilated hospital-acquired pneumonia (HAP). Sputum sampling determined one third of microbiological diagnosis in HAP patients who were not subsequently intubated. In contrast, invasive methods were associated with higher rates of microbiological diagnosis.

Hospital-acquired pneumonia (HAP) is common during an intensive care unit (ICU) stay. It is the leading cause of death among hospital-acquired infections, with estimates of its associated mortality ranging from 20 to 50%. However, data on the methods used for microbiological diagnosis of HAP are mainly extrapolated from ventilator-associated pneumonia (VAP). HAP poses additional challenges for respiratory sampling, and the utility of sputum cultures or distal sampling in HAP has not been comprehensively evaluated.

The recent guidelines for HAP/VAP recognised that for some patients, whom noninvasively sampling is not possible, invasive sampling is an option; however, the literature is scarce to support one method over the other in HAP. The present study aimed to describe the diagnostic approaches used in a cohort of HAP acquired during an ICU stay and their associated clinical impact.

In this study, researchers analysed 200 patients with HAP from six ICUs in a teaching hospital in Barcelona, Spain. Patients older than 18 years admitted to these ICUs for 48 hours or more with clinical suspicion of HAP or VAP were prospectively and consecutively included. The respiratory sampling methods used were divided into noninvasive – sputum and endotracheal aspirate (EAT); and invasive – fibreoptic-bronchoscopy aspirate (FBAS) and bronchoalveolar lavage (BAL).

A median of three diagnostic methods were applied (range 2–4). At least one respiratory sampling method was applied in 93% of patients, and two or more were applied in 40%. Microbiological diagnosis was achieved in 99 (50%) patients, 69 (70%) by only one method (42% FBAS, 23% EAT, 15% sputum, 9% BAL, 7% blood culture, and 4% urinary antigen). Seventy-eight (39%) patients underwent a fibreoptic-bronchoscopy when not receiving mechanical ventilation.

According to the researchers, higher rates of microbiological diagnosis were observed in the invasive group (56 vs. 39%, $p = 0.018$). Patients with microbiological diagnosis more frequently presented changes in their empirical antibiotic scheme, mainly de-escalation.

The ability to achieve a microbiological diagnosis in HAP has important consequences for patient care, including:

- It can support the suspicion of infection in a new lung infiltrate appearing concomitantly with fever in a critically ill patient, a frequent challenge for the attending physician.
- It makes possible to target the empiric antibiotic scheme more accurately, thus increasing the likelihood of clinical cure, preventing the selection pressure to further resistances, and reducing costs and unnecessary side effects.

A key point when discussing invasive vs. non-invasive tactics in HAP is the feasibility and safety of performing a fibreoptic-bronchoscopy. Several reports show that fibreoptic-bronchoscopy, followed by BAL or mini-BAL, can be conducted in patients with acute respiratory failure and community- and healthcare-acquired pneumonia and is even safer when noninvasive ventilation and high-flow oxygen therapy are applied.

Source: Critical Care

Image Credit: iStock

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