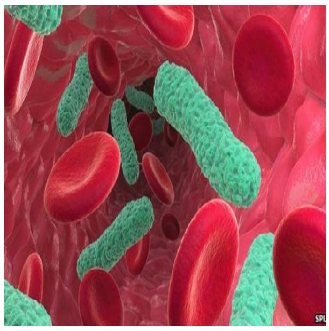
ICU
MANAGEMENT & PRACTICE

Gene Test for Rapid Sepsis Diagnosis



Researchers from the University of British Columbia (BC, Canada) have developed a new test that could help clinicians predict within an hour if a patient will develop severe sepsis. Currently, a typical diagnosis takes about 24 to 48 hours but with this new test, doctors could start treating patients almost immediately, according to the study published in *EBioMedicine*.

Sepsis is a syndrome caused by infection which can lead to organ failure. Four of the top 10 causes of death worldwide involve infection and meet the definition of sepsis. Each year, some 18 million cases of sepsis are reported across the world.

The UBC researchers identified a "gene signature" that is related with the eventual diagnosis of sepsis and subsequent organ failure. "We can test for this genetic signature as soon as the patient arrives in the emergency ward," said Bob Hancock, a professor in UBC's Department of Microbiology and Immunology who co-authored the study with John Boyd, a physician at St. Paul's Hospital (Vancouver) and an assistant professor at UBC.

The new test, the researchers said, could cut back on the lengthy diagnostic time usually required to confirm if a patient is suffering from sepsis and increase the odds that they will respond to treatment. The new test for the genetic signature would take as little as one hour and was able to identify 96 percent of patients who were at the very early stages of sepsis, the study authors noted.

"With sepsis, every hour counts," Hancock emphasised. "The treatment involves aggressive antibiotics but the most potent drugs can't be administered until a diagnosis is confirmed because of the risk of antibiotic resistant bacteria."

Results of the UBC study have also revealed a potential misunderstanding about the disease. To date, sepsis has been treated as an inflammatory disease but more than 30 clinical trials of anti-inflammatory drugs for sepsis have failed. The gene signature identified by Hancock et al. relates to a special type of immune suppression called cellular reprogramming and suggests that treating inflammation in sepsis is a bad idea.

PCSK9 Enzyme May be Key to Stopping Fatal Sepsis Outcomes

Meanwhile, another UBC-led study has discovered that controlling levels of the human enzyme PCSK9 could mean the difference between life and death for patients with severe sepsis. The study has been published in the journal *Science Translation Medicine*.

According to UBC researcher Keith Walley, inhibiting or reducing PCSK9 could allow the patient’s body to clear toxic remnants of bacteria and fungi destroyed by antibiotics. Eliminating the infection’s waste may improve the patient’s outcomes and survival rates.

Treatment of mice with severe sepsis using a PCSK9 inhibitor increased survival. Mice with a genetic variation that reduced the levels of PCSK9 also showed improved sepsis outcomes and survival rates, said the research team.

Currently, many drug companies are developing PCSK9 inhibitors to increase clearance of cholesterol thereby lowering cardiovascular risk. This raises the possibility that a PCSK9 inhibitor treatment is possible and treatment of sepsis in humans with a PCSK9 inhibitor might increase survival.

Source: ScienceDaily.com
Image Credit: BBC News

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