HealthManagement
Promoting Management and Leadership

Speech Analysis App Predicts Worsening Heart Failure

A voice analysis app used by heart failure patients at home recognises fluid in the lungs three weeks before an unplanned hospitalisation or escalation in outpatient drug treatment. The research was presented at Heart Failure 2022.

In patients with heart failure, the heart does not pump blood around the body as well as it should. As a result, fluid is not eliminated properly by the kidneys, and this excess fluid builds up in the lungs or legs. Lung congestion is a common cause of hospitalisation, and can be life-threatening. Currently, lung congestion is monitored by asking patients to weigh themselves every day and report any substantial gain. Patients are also requested to report worsening symptoms such as shortness of breath, needing to elevate the head at night to breathe comfortably and sleep, and swelling in the feet or ankles.

The speech analysis app used in the current study was previously shown to detect fluid in the lungs of patients hospitalised with acute heart failure. This study investigated its ability to predict worsening heart failure in patients living at home.

The study included 180 patients with heart failure taking guideline-recommended medications. At the beginning of the study, participants recorded five sentences on a standard smartphone using the voice analysis app. Patients recorded the same five sentences every morning before breakfast using the app. The app compared each day's recordings with the baseline versions and alerted research staff when it detected lung congestion.

The researchers examined whether the lung congestion alerts predicted heart failure events, defined as at least one worsening symptom which led to hospitalisation or *escalation in outpatient drug treatment*. They did this by comparing the date of the alert with the dates of subsequent heart failure events. "

Patients provided recordings for an average of 512 days. A total of 49 heart failure events occurred in 37 patients, of which the app correctly predicted 80%, and 20% were missed. True alerts were issued a median of 21 days before worsening symptoms. Each patient received a false alert every 4.8 months, resulting in an average of 2.5 erroneous warnings each year.

Professor Abraham said: "In this community-based study, a voice analysis app was able to predict most cases of worsening heart failure well in advance, with very few false alarms. Weight gain and symptoms occur too late to allow medical interventions that keep patients out of the hospital. Future studies will investigate whether changing patient management following an alert, for example, by increasing the diuretic dose to get rid of excess fluid, can prevent hospitalisations."

Source: ESC

Image Credit: iStock

Published on : Tue, 24 May 2022