

CLINICAL IMAGE

Periodic SvO₂ fluctuations in a patient with severe pulmonary emboli

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After a long flight from Asia, a 44-year-old woman was admitted to our hospital following collapse and with dyspnoea. CT-scanning confirmed the diagnosis of pulmonary emboli. A “saddle embolus” bridging across both pulmonary arteries provided the explanation for her symptoms. Thrombolysis was started immediately and she was admitted to the ICU. After being admitted for 12 hours, she developed severe shock with an extended right cardiac ventricle. An ultrasound guided continuous SvO₂ central venous catheter was inserted into the right internal jugular vein. After a few hours, the image in *figure 1* was obtained.

We were puzzled by the periodic fluctuations in SvO₂ with decreasing amplitude and zoomed in to analyze the duration of the periodicity. This proved to be 10 minutes (*figure 2*), exactly the default time used by the anti-decubitus mattress to inflate/deflate. After shutting down the mattress the periodicity disappeared (data not shown). The patient fully recovered and was successfully discharged from the ICU three days later.

Figure 1. Periodic fluctuation in SvO₂.

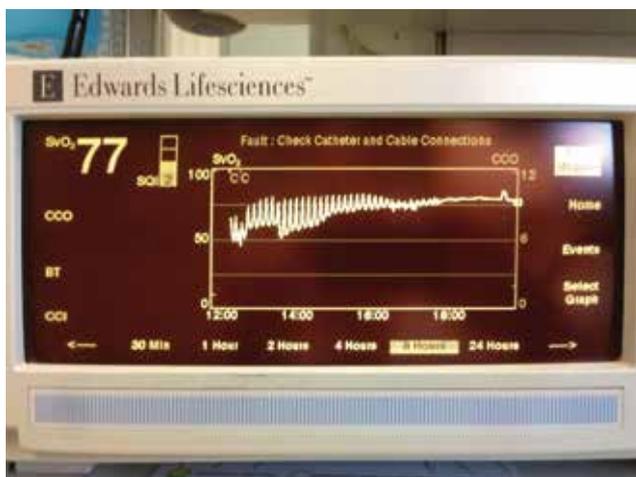
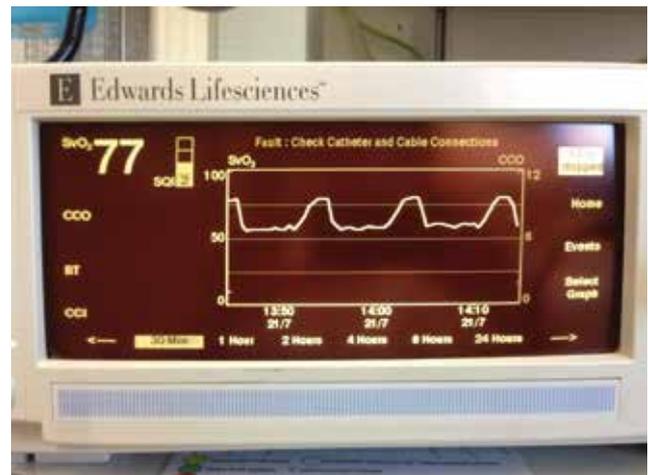


Figure 2. Periodic fluctuation in SvO₂ is similar to mattress inflation periodicity.



An explanation of the observed phenomenon may be the periodic sequential inflation of the mattress in a caudal-cranial direction with concomitant increase in venous return, thus influencing the SvO₂. However, the mattress does not inflate in this way, i.e. areas distributed amongst all body areas are intermittently inflated and deflated. One could also hypothesize that the periodic inflation of the mattress intermittently decreased the patient's thoracic wall compliance. This may in turn have resulted in an increase in intrathoracic pressure with subsequent decrease in venous return and a drop in the SvO₂. The patient was given IV fluids during the same period to maintain an adequate preload with a concomitant decrease in the amplitude of the periodic SvO₂ fluctuations.

We think this case description may be of importance for intensive care nurses and physicians when they make bedside observations in patients with continuous SvO₂ monitoring.