



Case History No 10



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A Report in the use of the SupraQ Suprasternal Doppler Cardiac Output Monitor

A male patient in his 50's was received in the intensive care unit of the Medway Maritime Hospital, Kent, United Kingdom, as an acute admission. The patient was suffering from both liver and renal failure (hepato – renal syndrome) and his history revealed that he regularly consumed large quantities of alcohol but thus far had never been diagnosed with liver disease.

The patient presented with hypotension, the blood pressure being in the region of 70/40 mmHg, he was tachycardic, anuric and jaundiced. Blood tests revealed deranged clotting with an International Normalised Ratio, INR > 9, the normal INR = 1.

Normal treatment at this stage would be to insert a central venous pressure (CVP) cannula and peripheral arterial cannula to assess adequate fluid resuscitation. However, due to the deranged clotting this was deemed to be too dangerous as bleeding from the punctured blood vessels can be life threatening when the INR is high. The question was how then to accurately manage resuscitation?

It was decided to measure left ventricular stroke volume (SV) response to fluid challenges using the SupraQ suprasternal Doppler monitor. A baseline SV of 74ml was measured and recorded. 500 ml of Voluven was then administered with the result that the SV increased to 87 ml, an increase of 17%. Because this was such a significant increase a further bolus of 500 ml of Voluven was given resulting in an increase of SV to 98 ml, a further 12% increase. A third 500 ml bolus was given and the SV increased again to 104 ml,

SupraQ probe position for measurement of cardiac output



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up another 6%. At this point it was considered that the patients' intravascular volume had been successfully optimised and it was noted that the blood pressure was now normal.

Comment: To insert CVP and arterial lines would have required administering clotting factors; this procedure normally takes up to 2 hours. Using the SupraQ allowed the clinicians to quickly and accurately resuscitate this patient in a non-invasive manner. Early fluid resuscitation has been shown to decrease mortality.

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