Validation of a novel device for noninvasive assessment of central venous pressure with potential in acute heart failure prevention: preliminary experience

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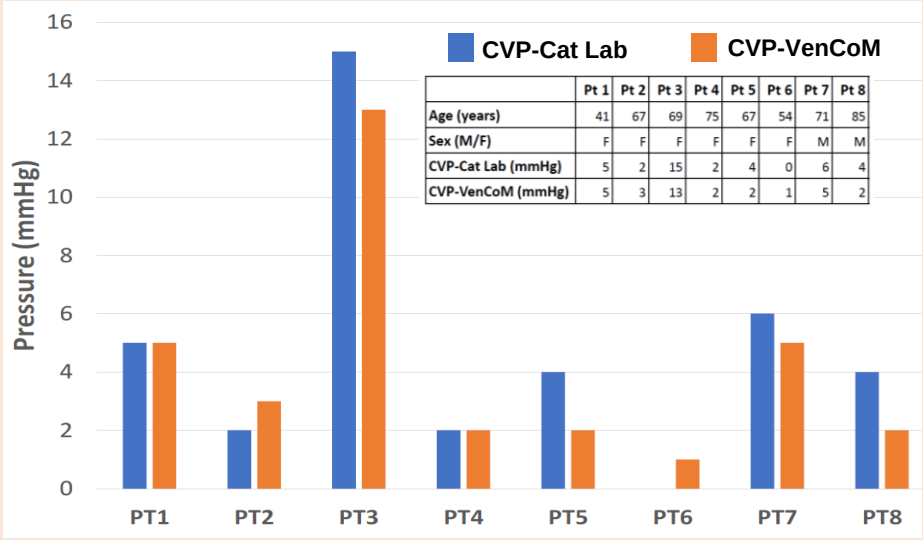
INTRODUCTION. Central Venous Pressure (CVP) is a key diagnostic parameter for driving appropriate medical therapy in patients at risk of acute **Heart Failure** (HF). Frequent invasive procedures cannot be proposed in standard clinical practice and ultrasounds assessment of inferior vena cava cannot be planned on a daily or weekly basis.
Recently, a **novel device (Venous Congestion Meter – VenCoM)** has been developed for **noninvasive monitoring of CVP**.

PURPOSE. To present preliminary validation of the novel noninvasive VenCoM device versus invasive CVP assessment by right heart catheterisation

METHODS. VenCoM is a plethysmographic device similar to a standard sphygmomanometer for blood pressure monitor, but with 2 pneumatic cuffs: a first occlusive cuff positioned on the upper arm, and a sensor cuff positioned on the forearm to detect volume changes due to the occlusion pressure applied by the first cuff, when in excess of existing venous pressure.

Eight patients submitted to **right heart catheterisation** are enrolled for comparing invasive assessment of CVP (**CVP-Cat Lab**), versus noninvasive CVP assessment performed by VenCoM (**CVP-VenCoM**).

RESULTS. Current preliminary experience is based on the first 8 patients submitted to right heart catheterisation and compared with VenCoM for validation purpose.
Linear regression analysis revealed that CVP-VenCoM **was significantly correlated** with invasive CVP-Cat Lab (r^2**=0.932**, p<0.001).



	Pt 1	Pt 2	Pt 3	Pt 4	Pt 5	Pt 6	Pt 7	Pt 8
Age (years)	41	67	69	75	67	54	71	85
Sex (M/F)	F	F	F	F	F	F	M	M
CVP-Cat Lab (mmHg)	5	2	15	2	4	0	6	4
CVP-VenCoM (mmHg)	5	3	13	2	2	1	5	2

CONCLUSIONS. The preliminary comparison of invasive CVP measurement versus noninvasive assessment with VenCoM system looks promising. This might open relevant opportunities for frequent monitoring of CVP in HF patients and not only, through large-scale clinical investigations.