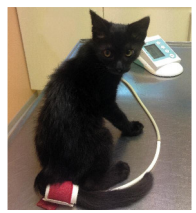
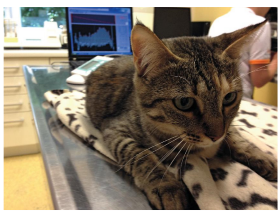


Comparison of HDO® (High Definition Oscillometry), a novel non invasive technology for arterial blood pressure measurement, to a direct invasive method using radiotelemetric equipment in awake healthy cats.

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Blood pressure is a key parameter needed in various pre-clinical trial of Safety Pharmacology especially when included in toxicology studies. We evaluated in 6 healthy cats a new non invasive method, high definition oscillometry (HDO®) including pulse wave analyses, by comparison to an invasive method using radiotelemetry device (DSI).

Results

Under standardized recording conditions, 5 systolic blood pressure (SBP) and diastolic blood pressure (DBP) paired measurements within the normal physiological range (SBP: 110-149 mm Hg, DBP: 50-89 mm Hg) were recorded using both methods. For comparison of data achieved with these two different methods, correlation coefficient (r) of paired measurements from the two methods was determined with 0,92 as well as, the mean difference of paired measurements, 88 % of paired measurements lying within a difference less than 10 mmHg and 96 % of paired measurements lying within a difference less than 20 mmHg.

Moreover, the agreement between the two methods was assessed using the method described by Bland and Altman with a bias of -2.2.

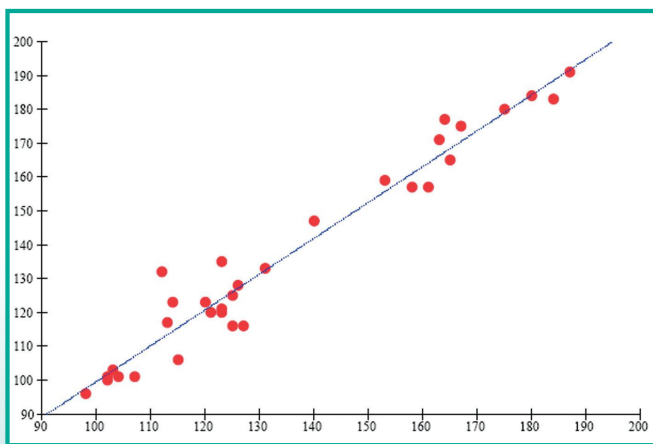


Fig 1: Linear regression between SBP and values measured with HDO and telemetry in an individual animal, cat N° 2008024. SBP: correlation coefficient $r=0.98$;

Pulse Wave Analysis (PWA)

Additionally pulse wave analysis (PWA) was performed to further detail the results. This analysis allows for visible evaluation of the arterial opening and serves to differentiate stress influence from true hypertension besides additional information on stroke volume, systemic vascular resistance, rhythm and arrhythmia.

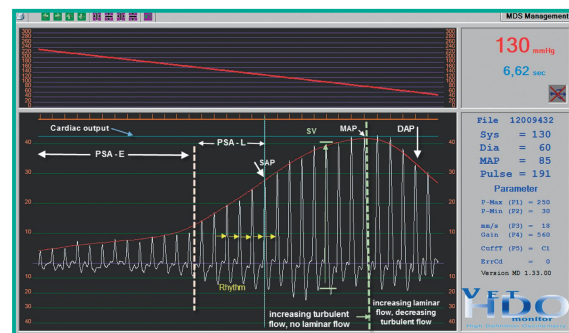
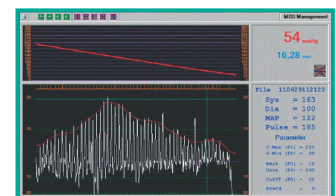


Fig. 1: normal distribution of pulse waves during the arterial opening with decreasing cuff pressure

Fig 2: stress influenced course: vasoconstriction (elevated PSA) and stroke volume variances (frayed pattern)



Conclusion

- Under these experimental conditions, SBP and DBP values achieved with HDO® and telemetry displayed a significant correlation in all cats.
- There is no bias between technology.
- AAMI and ACVIM standards have first time been met and even exceeded.

These preliminary data suggest that measurement of arterial blood pressure with HDO® in awake healthy cats provides values matching with those achieved with the gold standard invasive method for arterial blood pressure measurement. PWA may be in particular interesting in cardio-vascular research and evaluation of endothelial function like but not limited in diabetes and metabolic syndrome.

Acknowledgement

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