NEUROVASCULAR RESPONSES TO SEQUENTIAL DEEP INSPIRATIONS ASSESSED VIA LASER-DOPPLER PERFUSION CHANGES IN DORSAL FINGER SKIN

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BACKGROUND
A vasomotor reflex that is triggered by a rapid and deep inspiration causes an arteriolar vasodilation and induces a transient decrease in skin blood flow. Reports of this phenomenon appeared over 50 years ago, but many details of the sympathetic neural pathways involved are not yet known. Although the mechanism has been extensively studied, the effect of inspiration on blood flow may increase if (1) and often a flow increase follows (Figures 3-4).

RATIONALE
An important issue related to the use and interpretation of IGVR findings is its variability, within the same subject and among subjects. Factors that may affect the magnitude of the vasomotorresponse component include skin thickness, skin perfusion, age, gender and arterial stiffness.

OBJECTIVES
The present study was undertaken to characterize the ability to detect changes that might be induced by rapidly acting therapeutic interventions in patients with suspected neurovascular deficits.

METHODS
SUBJECTS: Twenty-eight volunteers (14 male) were studied. Subjects had no history of cardiovascular or neurological abnormalities.

PROCEDURES: Subjects sat in a height adjustable chair with hands placed palm down on a support surface. A laser-Doppler probe was placed on the finger. Baseline measurements were recorded and the laser-Doppler probe was placed on the index finger. The hand was then covered with a glove and breath-holding initiated. Tachyphylaxis when a steady state was reached was observed (5-20 minutes). During the test, laser-Doppler readings were measured every 30 seconds and was noted. Skin temperature and probe resistance were monitored and recorded every two minutes.

RESULTS

CONCLUSIONS
The dependence of overall variability among subjects on the number of sequential IGVR responses is known. Variability among subjects, depended on the number of sequential inspiratory gasps and measured at the finger dorsum and palmar surface.

REFERENCES
2. Barron SA et al., DC photoplethysmography in the evaluation of Raynauds Phenomenon, J Physiol 1936;86:83-94

Summary of Subject Data

METHODS

RESULTS

CONCLUSIONS

REFERENCES