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P2.11: IMAGING OF RETINAL ARTERIOLAR WALL IN VIVO IN HUMANS

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endothelial function, arterial stiffness, and renal vasodilating response to glyceryl trinitrate (GTN), a new parameter of renal vascular damage, in lean, normotensive patients with OSA.

Methods: 17 lean normotensive patients with moderate-severe OSA (AHI 31±19), and 21 matched healthy controls were recruited. Renal resistive index (RI) was obtained by Duplex ultrasound at baseline and after sublingual GTN (25 µg), evaluating renal vasodilation as percent RI change. Endothelium-dependent (flow-mediated-dilation, FMD) and -independent (response to GTN) vasodilation in the brachial artery was assessed by computerized edge detection system. Arterial stiffness was assessed as carotid-femoral pulse wave velocity (PWV).

Results: OSAS patients and controls presented similar RI (0.61 vs 0.59, $p=ns$), but impaired renal vasodilation to GTN ($-5.7\pm6.2\%$ vs $-10.3\pm4.6\%$, $p<0.05$). FMD was reduced ($4.1\pm2.5\%$ vs $6.2\pm3.1\%$, $p<0.05$), while endothelial-independent brachial artery vasodilation was preserved. PWV was not different between OSAS and controls (7.9 ± 1.5 vs 7.7 ± 1.4 m/s, $p=ns$).

Conclusions: Even in the absence of hypertension and obesity, OSAS is characterized by endothelial dysfunction and impaired renal vasodilating capacity. Thus, OSAS could predispose per se to vascular and renal damage.

P2.09

DAMAGE ACCRUAL IS ASSOCIATED WITH ENDOTHELIAL FUNCTION DETRIMENT: A PROSPECTIVE COHORT STUDY

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Introduction: Our aim was to study endothelial function in a cohort of systemic lupus erythematosus (SLE) patients prospectively followed at our unit and to investigate its relation with disease activity and damage over time.

Materials and Methods: 38 female SLE patients without overt cardiovascular involvement were enrolled (age 35.8 ± 8 ys), followed-up for a mean of 4.45 ± 1.5 years. Clinical history, traditional cardiovascular risk factors, and laboratory parameters were recorded. Active disease was defined as ECLAM global score >2 ; SLICC/ACR-DI was used for scoring disease damage. FMD was assessed in the brachial artery by high-resolution ultrasound and computerized edge detection system (Quipu s.r.l., Pisa, Italy). FMD assessment was performed at study entry and was repeated in a subgroup of 21 patients at the end of follow-up.

Results: At enrollment, 18 patients presented active disease; mean FMD was $7.9\pm3.1\%$ with no differences between active (8.7 ± 1) and inactive group (7.9 ± 0.8 ; $p=0.53$), even after correction for age and disease duration. Baseline FMD tended to correlate with disease duration ($p=0.06$), and was similar in the patients with final poor outcome - death ($n=3$) or damage accrual ($n=12$) - compared to the others. In the follow-up, FMD showed a significant decline over time (from 8.0 ± 3.2 to 5.9 ± 3.3 , $P=0.04$) while endothelial-independent dilation did not (from 9.2 ± 3.5 to 8.6 ± 4.9 ; $p=0.63$). The decline was not different between active and inactive group; however, patients with poor outcome ($n=7$) showed a greater worsening in FMD over time (-4.1% vs -2.0%).

Conclusions: This study shows that, in SLE patients, disease duration rather than disease activity appears to influence endothelial function. Furthermore, damage accrual is associated with progressive detriment in endothelial function, with preserved response to glyceryl trinitrate.

P2.10

MECHANISTIC INSIGHTS INTO THE RELATIONSHIP BETWEEN WAVE REFLECTION AND RETINAL ARTERY FLOW PULSATILITY

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Background: Increased arterial stiffness is associated with a reduced buffering capacity of the large arteries, therefore predisposing the microcirculation to increased flow and pressure pulsatility. Previous data from our group have illustrated a positive relationship between aortic pulse wave velocity and an inverse relationship between wave reflection and retinal artery flow pulsatility. Therefore, the aim of this study was to investigate the macrovascular haemodynamic mechanisms involved in retinal artery flow pulsatility, by manipulation of wave reflection by Glycerol Trinitrate Nitrate administration.

Methods: Nine individuals, aged 63 ± 6 years and free from CV acting medication participated in this study. Augmentation index (AIx) was recorded using the Sphygmocor system (Atcor) as a measure of wave reflection. Pulsatility index (PI), a measure of retinal artery flow pulsatility was recorded using

doppler ultrasound (GE) and both peripheral and central blood pressure were measured using the Mobilograph system (IEM). All vascular haemodynamic measurements were recorded simultaneously at baseline and then again at 1, 3, 5, 10 and 15 minutes post GTN administration.

Results: The relationship between AIx and PI change from baseline were significantly different at 3 and 5 minutes ($P=0.02$ and $P=0.03$, respectively). See figure 1.

Conclusion: This study illustrates a direct inverse relationship between AIx and retinal artery flow pulsatility, suggesting a direct link between large artery haemodynamics and pulsatile flow in the microvasculature.

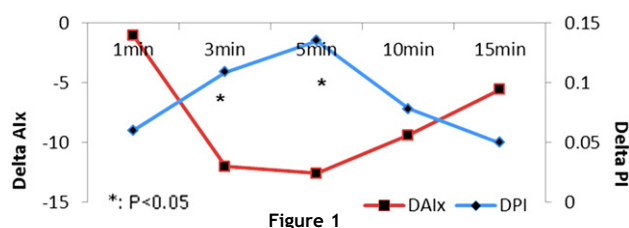


Figure 1

P2.11

IMAGING OF RETINAL ARTERIOLAR WALL IN VIVO IN HUMANS

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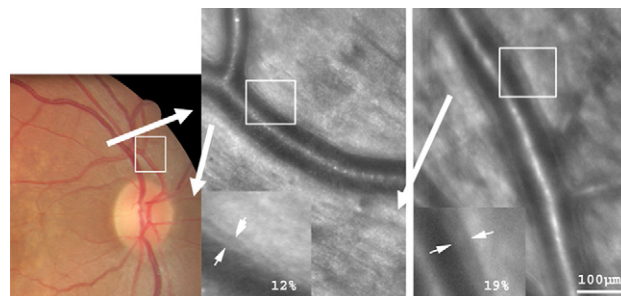
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Purpose: Adaptive optics (AO) is an opto-electronic technique improving lateral resolution of fundus images. Here we report a novel application of AO imaging, namely the visualization of the arteriolar wall in the human retina.

Methods: This study was done in compliance with French ethical regulations. AO fundus imaging was performed using a prototypic camera (RTX1, ImagerieEye, Orsay, France) in a cohort of healthy subjects and in patients affected by arterial hypertension. The camera uses infrared light, and the total acquisition time is less than 1 minute. The wall-to-lumen ratio (WLR) was measured in an arteriolar segment approximately 500 microns from the disc.

Results: 12 healthy subjects, 2 hypertensive patients and 1 patient affected by branch retinal vein occlusion were examined. The wall-to-lumen ratio varied from 11 to 15% in healthy eyes, and was 18% and 19% in the two hypertensive subjects. In the subject that had branch retinal vein occlusion, irregular thickening of the vessel wall was found.



Conclusions: We provide here the first in vivo images of the arteriolar wall in humans. This technique may be useful for the quantitative assessment of microvascular damage in aged and/or hypertensive patients.

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P2.12

THE INTERPLAY OF ENDOTHELIAL FUNCTION, INFLAMMATORY AND OXIDATIVE STATUS IN HIV INFECTION. DOES ANTIRETROVIRAL THERAPY PLAY A ROLE?

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