



# Artery 10

The tenth conference in a series of meetings to provide a forum for discussion on arterial structure and function

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FINAL  
PROGRAMME  
AND  
ABSTRACTS



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European Society  
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Società Italiana dell'Ipertensione Arteriosa  
Lega Italiana contro l'Ipertensione Arteriosa

show i core of the plaque  
 that m nposition.  
 The f rasound strain imaging  
 using radionuclide, demonstrate the  
 potential of quantifying plaque mechanics. Further  
 validation of these methods will open the door for clinical  
 screening of vulnerable plaques.

- [1] Lopata RGP, *et al.* Ultrasound Med. Biol. 2009  
 [2] Hansen HHG, *et al.* Phys. Med. Biol. 2010  
 [3] Idzenga T, *et al.* Ultraschall in der Medizin 2010

### 8.3 REDUCED SYSTEMIC ARTERIAL COMPLIANCE IN STABLE HEART TRANSPLANT PATIENTS

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**Purpose:** Despite high prevalence of cardiovascular diseases in heart transplanted patients (HTx), the global systemic arterial properties are not well described. Thus, the aim of this study was to evaluate arterial properties in HTx.

**Methods:** 26 stable heart transplanted patients (age 50 ± 17 years (mean ± SD)) with no signs of rejection or cardiac failure were investigated 4.5 ± 1.8 years after HTx and compared with healthy age-matched subjects with either normal blood pressure or similar brachial mean arterial blood pressure (MAP). Aortic root pressure and flow data were obtained by semi-simultaneous recordings of aortic root Doppler flow velocities, brachial arterial blood pressure and calibrated carotid arterial pulse trace. Systemic arterial properties were described by total arterial compliance (C), arterial elastance (Ea), characteristic impedance (Z<sub>0</sub>), and peripheral vascular resistance (TVR). Parameters were estimated by Fourier analysis of central aortic pressure and flow data and methods based on the 2-element windkessel model (pulse pressure method).

**Results (Table):** HTx patients had significantly higher Ea and lower C compared with the normotensive subjects. However, C trended lower (p=0.07) in the MAP-matching group compared with the normotensive subjects.

**Conclusion:** Systemic arterial properties in HTx differ significantly from normotensive subjects; however only small variations were seen compared to the MAP-control group. Thus, the low compliance is likely due to a pressure-dependent effect.

	TxCOR	MAP-control	Normotensive	P-ANOVA
Subjects (men / women)	26 (19/7)	22 (17/5)	24 (16/8)	
MAP (mmHg)	102 ± 12	103 ± 7 †	89 ± 6 **	< 0.001
Heart rate (beats/s)	79 ± 13	62 ± 9 **	60 ± 9 **	< 0.001
Cardiac output (l/min)	5.0 ± 1.1	5.1 ± 1.3	4.8 ± 1.0	0.57
TVR (mmHg/(ml/s))	1.28 ± 0.4	1.26 ± 0.3	1.17 ± 0.3	0.41
Z <sub>0</sub> (10 <sup>-3</sup> mmHg/(ml/s))	98 ± 29	104 ± 25	111 ± 41	0.36
C (ml/mmHg)	0.88 ± 0.3	0.95 ± 0.2	1.12 ± 0.2 **	0.005
Ea (mmHg/ml)	1.74 ± 0.5	1.43 ± 0.3 *	1.27 ± 0.4 **	0.001

Mean ± SD, \* p<0.05 and \*\* p<0.005 compared with TxCor. †p<0.005 compared with normotensive subjects.

### 8.4 SYSTEMATIC REVIEW OF THE EFFECT OF ANTI-HYPERTENSIVE DRUG THERAPY ON ARTERIAL STIFFNESS

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**Background:** Since arterial stiffness (AS) is one of the factors influencing prognosis in hypertensive patients, we performed a systematic review of studies testing the effect of anti-hypertensive therapy on AS.

**Methods:** We performed a systematic search of the literature using on-line databases (1966-Dec2009). We included studies on Pulse Wave Velocity (PWV, m/s - expression of AS) and blood pressure (BP-reported as continuous variable), measured at the beginning and at the end of study, carried out in adult populations after a run-in period. We found one placebo-controlled study (Mitchell, 2007) and 18 reporting a treatment effect in comparison with baseline. For each study, mean difference and 95% C.I. were extracted and pooled using a random effect model.

**Results:** We identified 19 studies (37 cohorts), which included 1,291 participants. The mean observation time was 17 weeks. In the pooled analysis, there was a significant decrease of PWV after treatment (-1.17; 95% C.I. = -1.51, -0.83). In separate analyses the significant PWV reduction was evident with ACE-I (n=12, -1.39; -1.97, -0.82), ARBs (n=7, -1.56; -3.00, -0.12) and Beta-blockers (n=7, -1.03; -1.23, -0.82). While PWV changes with Ca-channel-blockers (n=7, -0.88; -1.84, 0.08) and Diuretics (n=3, 0.13; -0.26, 0.52) were not significant. There was no publication bias but significant heterogeneity between studies. Meta-regression analysis showed that significant sources of heterogeneity were basal age and BP and BP changes after therapy.

**Conclusions:** This systematic review suggests that anti-hypertensive treatment improves AS probably with a drug related effect. However the lack of placebo controlled as well as comparative treatment trials do not allow us to reach definite conclusions.