



Hemodynamic Changes of Doppler Gradients during Pregnancy and the Influence of Ventricular Function in Patients with Valvular Heart Disease

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ZAHARA I: Drenthen et al – JACC 2007

ZAHARA II: Pieper et al – Circulation 2013

Now ZAHARA III





- Pregnant women with valvular heart disease (VHD): careful evaluation including regular echocardiographic assessment
- Valvular Doppler gradients are expected to increase during pregnancy, but there are little data
- **AIM:**
To study the course during pregnancy of Doppler gradients used for the assessment of VHD





- ZAHARA studies (prospective multicenter) or identical protocol
 - Pulmonary stenosis (PS)
 - Prosthetic pulmonary valve (PPV)
 - Aortic stenosis (AS)
 - Prosthetic aortic valve (PAV)
- Controls: healthy pregnant women

Echocardiography



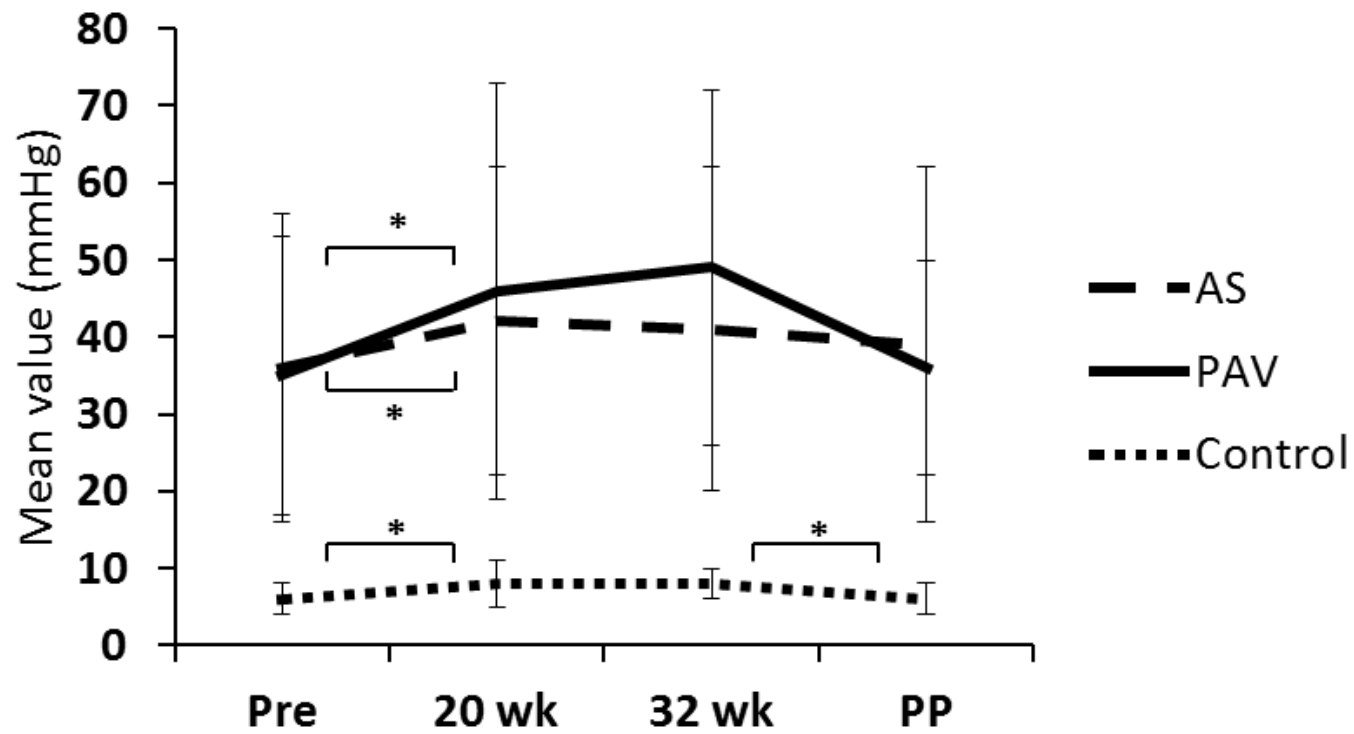


- Included:
 - 66 pregnant women with VHD
 - 46 pregnant controls
- Valvular complications during pregnancy:
 - 1 woman with PAV had valve trombosis in 1st trimester
 - No other pathological valve obstruction
- Focus: peak and mean gradient of the valves





Peak gradient aortic valve

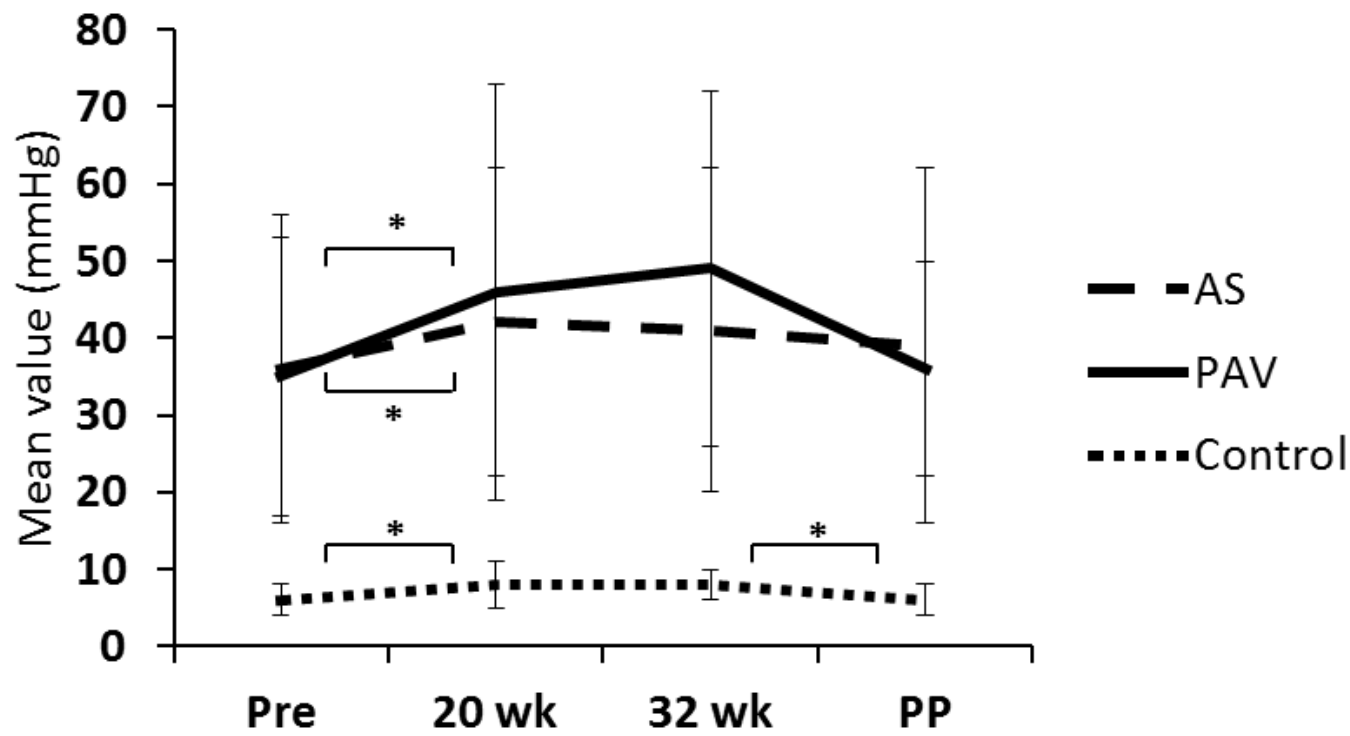


Unchanged calculated valve area during pregnancy

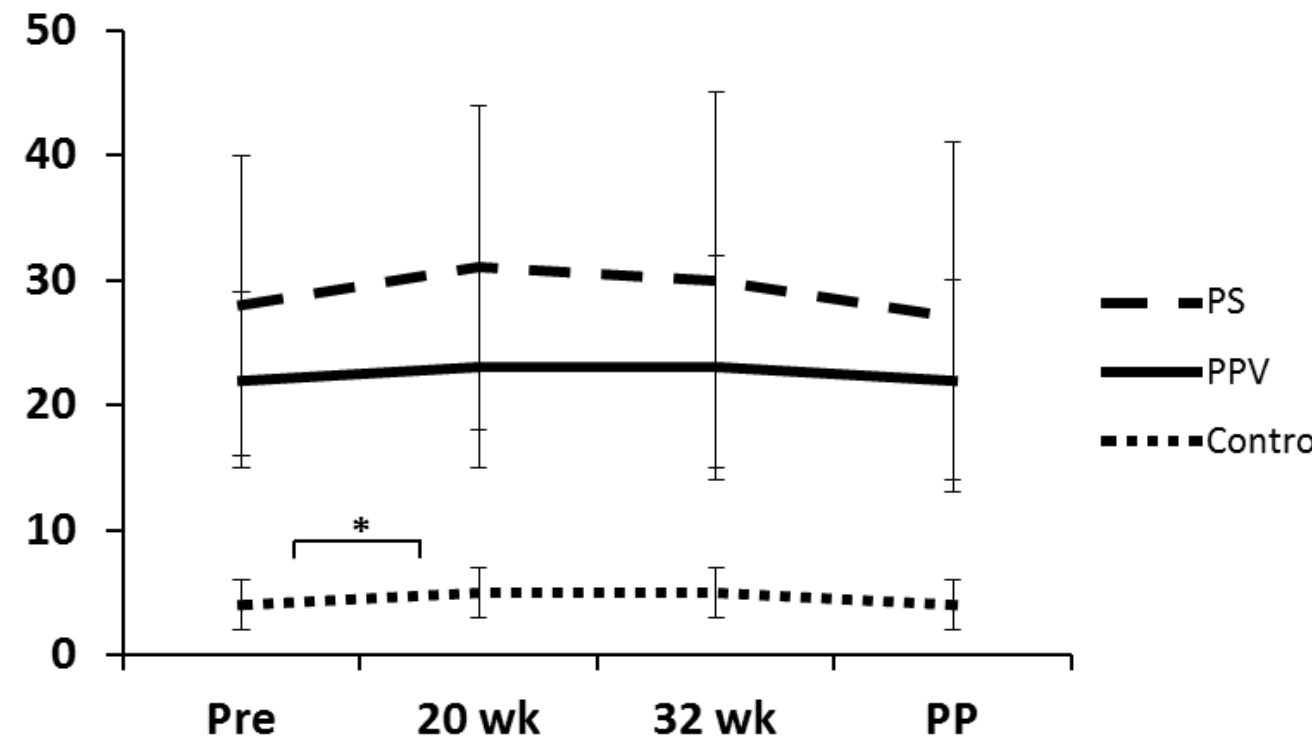




Peak gradient aortic valve



Peak gradient pulmonary valve



Preconception and postpartum gradients were comparable in all groups





- Parameters might influence Doppler gradient
 - Heart rate
 - Ventricular function
- Heart rate
 - Increased in all groups
 - valve gradient/heart rate: no increase during pregnancy
- Ventricular function
 - LVF: normal LVEF(>50%) in all groups
 - RVF: significantly lower TAPSE in pulmonary VHD ($\leq 20\text{mm}$ vs. $\geq 23\text{mm}$, $p < 0.001$)





Conclusions

- Physiological changes during pregnancy lead to increased Doppler gradients in aortic VHD
- Not found in pulmonary VHD, probably caused by reduced RVF
 - Evaluation of RVF to prevent possible underestimation of the degree of stenosis
- When possible, degree of valve stenosis must be estimated by valve area measurements during pregnancy





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