LONGITUDINAL ANALYSIS OF CARDIOVASCULAR CHARACTERISTICS IN PREGNANCY

D Zentner[1,2], M du Plessis[1], S Brennecke[3,4], J Wong[1], L Grigg[1], S Harrap[2], [1]*Cardiology Department, Royal Melbourne Hospital; Department of* [2]*Physiology and* [3]*Obstetrics and Gynecology, University of Melbourne;* [4]*Department of Perinatal Medicine, Royal Women's Hospital, Melbourne*

Maternal cardiovascular adaptation is understood to accompany pregnancy. Despite identification that pregnant women require specific echocardiographic reference values, these do not currently exist. Hemodynamic data derived from invasive studies may have exaggerated baseline variables such as heart rate and consequently cardiac output, secondary to anxiety or discomfort. In this study subjects were pregnant (singleton) women (N = 32) seen in early (median = 16 weeks) and again in late (median = 37 weeks) pregnancy. Systolic blood pressure (SBP), heart rate (HR), cardiac output (CO), preload (E/E') and afterload (wall stress) (MWS) were determined non-invasively. Data are presented as median (interquartile range), with paired non-parametric (Wilcoxon) statistical comparison. Over the course of pregnancy, SBP, preload and afterload all increased significantly. HR and CO rose slightly, though differences were not statistically significant. Appropriate rest prior to hemodynamic assessment (30 minutes) resulted in lower heart rates and cardiac output compared with published data. This confirms the need to determine non-invasively what constitutes normal heart function during pregnancy. The findings indicate that even in normal pregnancies preload and afterload rise significantly implying a greater cardiac workload in late pregnancy. This might explain the predisposition during the perinatal period to cardiac complications of pregnancy.

Variable	Early pregnancy	Late pregnancy	*2p*
SBP (mmHg)	105 (99 – 112)	113 (107.5 – 128)	*<0.001*
HR (bpm)	72.5 (62.3 – 82.5)	73 (64.3 – 87.8)	*ns*
CO (L/min)	5.3 (4.3 – 6.3)	5.7 (4.7 – 6.3)	*ns*
E/E'	8.5 (6.9 – 9.7)	9.4 (7.3 – 11.3)	*0.004*
MWS ($\times 10^3$dynes/cm^2)	43.2 (37.4 – 46.6)	92.2 (87.2 – 99.5)	*< 0.001*