Objective:
To examine the potential of spatio-temporal image correlation (STIC) and tissue Doppler imaging (TDI) in the detection of fetal cardiac structure and function in normal pregnancy.

Method:
80 normal pregnancies were enrolled. Fetal echocardiogram was performed. STIC with M-mode display (STIC-M) was used to measure the thicknesses of the fetal ventricular wall and interventricular septum, and ventricular internal diameters at end-systole and end-diastole, and to calculate ventricular shortening fractions (SF). TDI ultrasound was used to measure fetal atrioventricular annular velocity in early diastole (Ea), annular velocity in late diastole (Aa) and annular velocity in systole (Sa), and to calculate the Ea/Aa ratios. Explore the trend of fetal cardiac structure and function in normal second and third trimester.

Result:
The thickness of the fetal ventricular wall and interventricular septum at end-systole and end-diastole are in positive correlation with gestational age (P<0.001). Ventricular internal diameter at end-systole and end-diastole are also in positive correlation with gestational age (P<0.001). But left and right ventricular shortening fraction are in negative correlation with gestational age (P<0.001). Ea, Aa, Ea/Aa and Sa of atrioventricular annulus are in positive correlation with gestational age. (P<0.001).

Conclusions:
Fetal cardiac structure and function gradually become mature with the progress of pregnancy. STIC and TDI have certain value to detect fetal cardiac structure and function.