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## Influence of fetal respiratory movements on left atrial functional status.

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### Abstract

**OBJECTIVE:** Because fetal respiratory movements increase left ventricular compliance, we hypothesized that the left atrial shortening fraction increases during fetal respiratory motions.

**METHODS:** A group of 26 normal fetuses with gestational ages between 28 and 38 weeks were assessed in a prospective cross-sectional study. Left atrial telesystolic and presystolic diameters were measured during apnea and after five consecutive respiratory movements. Left atrial shortening fraction was obtained by the ratio: [maximal left atrium diameter (telesystolic) - minimal left atrium diameter (presystolic)]/maximal left atrium diameter (telesystolic). The mean of three measurements were considered. Two-tailed Student's t-test was used.

**RESULTS:** Mean gestational age was (mean  $\pm$  SD) 30.7  $\pm$  2.8 weeks. Mean left atrial telesystolic diameter in apnea was 10.6  $\pm$  0.7 mm and during respiratory movements it was 10.5  $\pm$  1.1 mm ( $p = 0.98$ ). Presystolic left atrial diameter was 5.2  $\pm$  0.1 mm in apnea and 4.4  $\pm$  1.3 mm during respiratory movements ( $p < 0.001$ ). Left atrial shortening fraction was 0.50  $\pm$  0.05 in apnea and 0.58  $\pm$  0.13 during respiratory movements ( $p < 0.001$ ).

**CONCLUSION:** Left atrial shortening fraction is higher during respiratory movements as a result of increased left ventricular compliance and consequent optimization of left atrial functional status.

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