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Fetal Echocardiography performance: Indication-based vs "routine" application.

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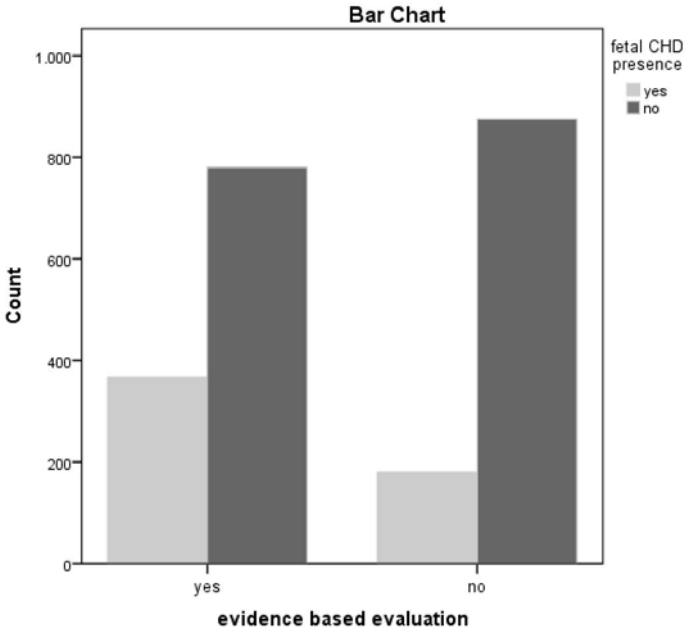
Introduction:
Established indications (EI) for performing fetal echocardiography (fEcho) are based on documented increased risk for fetal congenital heart disease (fCHD) in the presence of specific indications, over the literature-based baseline fCHD risk in the general population.



Methods:
Direct comparison of risk for fCHD (overall and indication specific) relative to the baseline risk for fCHD when fEcho is performed for non-established indications (NEI).
Retrospective study of 2,202 fECHO records (years 2008-16) from a tertiary referral centre, all performed by a single operator under same settings. Referral indications were classified as established (EI) based on recent recommendations (AHA 2014), or non-established (NEI), including: parental wish, “echogenic foci”, previous fetus with chromosomal abnormality, NT <3.5mm, medications without association with fCHd , maternal heart disease (non-CHD), relatives (non-first degree) with CHD, reduced window in anomaly scan, increased PAPPA.
Odds ratio (O.R, 95% C.I) for fCHD and critical fCHD (anticipated to require neonatal intervention) were estimated in the presence/absence of EI for fECHO, along with Relative Risk (R.R)
Results:
367 out of 1147 (32%) of EI cases were associated with fCHD, vs 180 out of 1055 (17%) of NEI cases (Pearson’s Chi-square 65.6, df=1, p<0.001). O.R for fCHD presence (yes/no): 2.28 (1.86-2.80), R.R for fCHD for EI: 1.42 (1.31-1.53), for NEI: 0.62 (0.54-0.7)
A total of 19 (1.7%) of EI cases were associated with critical fCHD, compared to 6 (0.6%) of NEI cases (p=0.016), O.R for critical fCHD presence (yes/no): 2.94 (1.17-7.4), and a R.R for critical fCHD for EI: 2.91 (1.16-7.2), for NEI: 0.98 (0.98-0.99)
Among EI cases, the highest probability for fCHD (50-60%) was documented in cases of suspected fCHD in anomaly scan, polyhydramnion, and fetal chromosomal abnormalities, followed (30-50%) by increased NT, fetal malformations, with lowest probability (20-30%) in 1st degree relatives with CHD, monochorionic twins. The probability for critical fCHD was highest for suspected fCHD during anomaly scan (5%), increased NT and fetal malformation (1.5-2%).
Conclusions:
Indication-based fetal echocardiography is associated with 2-fold and 3-fold increased diagnostic yield for fetal CHD and critical fetal CHD, respectively, compared to its performance when applied “routinely” for non-established indications.