



Outcome of antenatally diagnosed bowel echogenicity and bowel dilatation: a systematic review of the literature and meta-analysis

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Objective

Bowel echogenicity (BE) and bowel dilatation (BD) have been described as markers for a variety of conditions (chromosomal and infectious disorders, cystic fibrosis, etc.) and gastro-intestinal (GI) anomalies. However, in the absence of other conditions, the association of isolated BE and BE+BD with GI anomalies is unclear and poses a significant dilemma for antenatal counselling. This study aims to evaluate the incidence of GI anomalies in fetuses with antenatally diagnosed isolated BE and BE+BD.

Methods

A systematic review and meta-analysis (1990-2017) was conducted according to the PRISMA guidelines. The study was registered with PROSPERO (CRD42017074139). Selected studies included retrospective and prospective case series with data regarding post-natal outcome of isolated BE and BE+BD. Proportion meta-analysis for non-comparative studies (Freeman-Tukey transformation) was conducted using the random-effect model. Comparison of proportions between the two groups was performed using the "N-1" Chi-squared test [95% CI]. Heterogeneity was assessed using I² values. Relative risk (RR) with [95% CI] was calculated. P value <0.05 was considered significant.

Results

We identified 1630 studies: after duplicates were removed, 89 studies were analysed; 72 did not meet the inclusion criteria; 17 were included. Of 902 cases diagnosed with isolated BE, 16 presented with a GI condition at birth (1.9% [0.8-3.3]; I²=43.9% [0.0-68.8; p=0.03]). Of 57 cases diagnosed with BE+BD, 17 presented with a GI condition at birth (42.4% [10.8-78.0]; I²=88.1% [74.9-94.4; p<0.01]). Comparison of proportions showed a significant difference between the two groups (40.5% [27.4-54.3]; p<0.0001). Risk of having a GI anomaly was significantly higher in BE+BD group compared to BE group (RR 16.8 [8.9-31.5]; p<0.0001).

Conclusion

Despite some heterogeneity between studies, current evidence suggests that the finding of isolated BE is associated with <2% incidence of a GI anomalies at birth. On the other hand, the finding of BE+BD is associated with >40% incidence of GI anomalies at birth. This study provides the best available evidence for antenatal counselling of parents with fetuses with BE or BE+BD and no other associated conditions.