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Review

Perinatal outcomes of isolated oligohydramnios at term and post-term pregnancy: a systematic review of literature with meta-analysis

A. Cristina Rossi [a,*], Federico Prefumo [b]

[a] Department of Obstetrics and Gynecology, University of Bari, Bari, Italy
[b] Maternal-Fetal Medicine Unit, Department of Obstetrics and Gynecology, University of Brescia, Brescia, Italy

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ABSTRACT

Objective: The management of isolated oligohydramnios (IO) in post/term pregnancies is controversial. The aim of this paper was to review outcomes of term and post-term pregnancies with IO versus normal amniotic fluid (AF) at labor assessment.
Study design: A search in PubMed, Medline, EMBASE, and reference lists was performed. Inclusion criteria for articles selection: singleton pregnancy, definition of olgohydramnios as AFI <5 cm, AF assessment at 37–42 gestational weeks. Exclusion criteria: fetal malformations, preterm delivery, premature rupture of membranes, intrauterine growth restriction. Perinatal outcomes were: obstetric intervention for non-reassuring fetal heart rate (cesarean section, operative delivery), meconium-stained AF, Apgar score <7 at 5 min, umbilical artery pH <7.0, small for gestational age infants (SGA), admission to neonatal intensive care unit (NICU) and perinatal death. Meta-analysis compared outcomes of pregnancies with IO vs normal AF. Inter-studies heterogeneity was tested. Pooled odds ratio (OR) and 95% confidence interval (95% CI) were calculated. Differences between the two groups were considered significant if 95% CI did not encompass 1. MOOSE guidelines were followed.
Results: Four articles provided 679 (17.2%) cases with IO and 3264 (82.8%) with normal AF. Obstetric interventions occurred more frequently in the IO than normal AF group (IO: 89/679, 13% vs normal; AF: 166/3354, 5%; OR: 2.30; 95% CI: 1.00–5.29). Meta-analysis did not show differences with regard to meconium, Apgar, pH, SGA, NICU and perinatal death.
Conclusion: In term or post-term pregnancies, IO is associated with increased risk of obstetric interventions but outcomes are similar to those of pregnancies with normal AF.

Contents

1. Introduction

The incidence of oligohydramnios varies widely, from approximately 0.5% [1] to 5% [2], depending on the study population and definition of oligohydramnios. Oligohydramnios can be isolated or associated with maternal or fetal conditions such as hypertension, premature rupture of membranes, fetal growth restriction and congenital anomalies. While perinatal outcomes of associated oligohydramnios are related to the underlying condition, the natural history of isolated oligohydramnios is unclear. In post-term pregnancies, placental insufficiency has been proposed as main factor of reduced amniotic fluid volume [3]. Alternatively, the maturation of the renal system can lead to a physiological increase of amniotic fluid absorption [3].

The optimal management of term or post-term pregnancies with isolated oligohydramnios is controversial. The most recent meta-analysis on this topic showed that AFI <5 cm is associated with 2-fold increased risk of cesarean delivery for fetal distress and 5-fold increase in Apgar score <7 at 5 min compared with

* Corresponding author at: Via Celentano, 42, 70121 Bari, Italy. Tel.: +39 0805248039; fax: +39 0805248039; mobile: +39 3334476630.
E-mail address: acristinarossi@yahoo.it (A.C. Rossi).

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pregnancies with normal amniotic fluid [4]. That meta-analysis was published in 1999. The aim of this review was to analyze subsequent literature, in order to define whether the risk of adverse perinatal outcomes in pregnancies complicated with isolated oligohydramnios at labor is increased compared with pregnancies with normal amniotic fluid.

2. Materials and methods

As in the previous meta-analysis by Chauhan et al. [4], we defined oligohydramnios as AFI <5 cm in the setting of active labor.

A search in PubMed, EMBASE, Medline and reference lists was performed for relevant articles that compared perinatal outcomes in term and post-term pregnancies complicated with isolated oligohydramnios (study group) with term or post-term pregnancies with normal amniotic fluid volume (control group). The study period of the review ranged from January 2000 to January 2012. Key words were: amniotic fluid, term pregnancy, isolated oligohydramnios, amniotic fluid volume (AFI), perinatal outcomes. Inclusion criteria for study selection were: singleton pregnancy, definition of olgohydramnios as AFI <5 cm, detection of oligohydramnios at 37–42 gestational weeks, assessment of amniotic fluid volume upon admission to labor and delivery in active labor, oligohydramnios assessed during labor, and outcomes compared with controls. Exclusion criteria were: omitting at least one inclusion criterion, fetal malformations, preterm delivery, oligohydramnios secondary to premature rupture of membranes, antenatal detection of intrauterine growth restriction, and data reported in graph or percentage form rather than proportional rates. Personal communications, letters and non-English language publications were also excluded.

Perinatal outcomes were defined as rates of meconium-stained amniotic fluid, obstetric intervention for non-reassuring fetal heart rate (operative vaginal delivery or emergency cesarean section), Apgar score <7 at 5 min, umbilical artery pH <7.0, small for gestational age infants (SGA, i.e. birth weight <20th centile for gestational age), admission to neonatal intensive care unit (NICU) and perinatal death (stillbirth or neonatal death within 28 days from birth). Data were stratified for pregnancies at high or low risk. Women at high risk were defined as pregnancies complicated with pre/eclampsia, intrauterine growth restriction, fetal malformation leading to oligohydramnios, maternal renal disease, or any hypertensive disorder.

An effort to contact the corresponding author was made in an attempt to get unpublished or incomplete data. The two authors independently reviewed articles and abstracted data. Discordance was resolved with consensus. MOOSE guidelines were followed. Risk of bias within and across studies was assessed according to the Cochrane Collaboration's tool for assessing risk of bias.

Comparative analysis was performed between the study and control groups. For this purpose, inter-studies heterogeneity was defined according to Higgins et al. [5] as the percentage of total variation across studies due to heterogeneity rather than chance (I^2) and was tested with chi-squared test for heterogeneity at a significant level of $P = 0.10$. A random effect model was generated whenever I^2 was ≥25%. Pooled odds ratio (OR) and 95% confidence

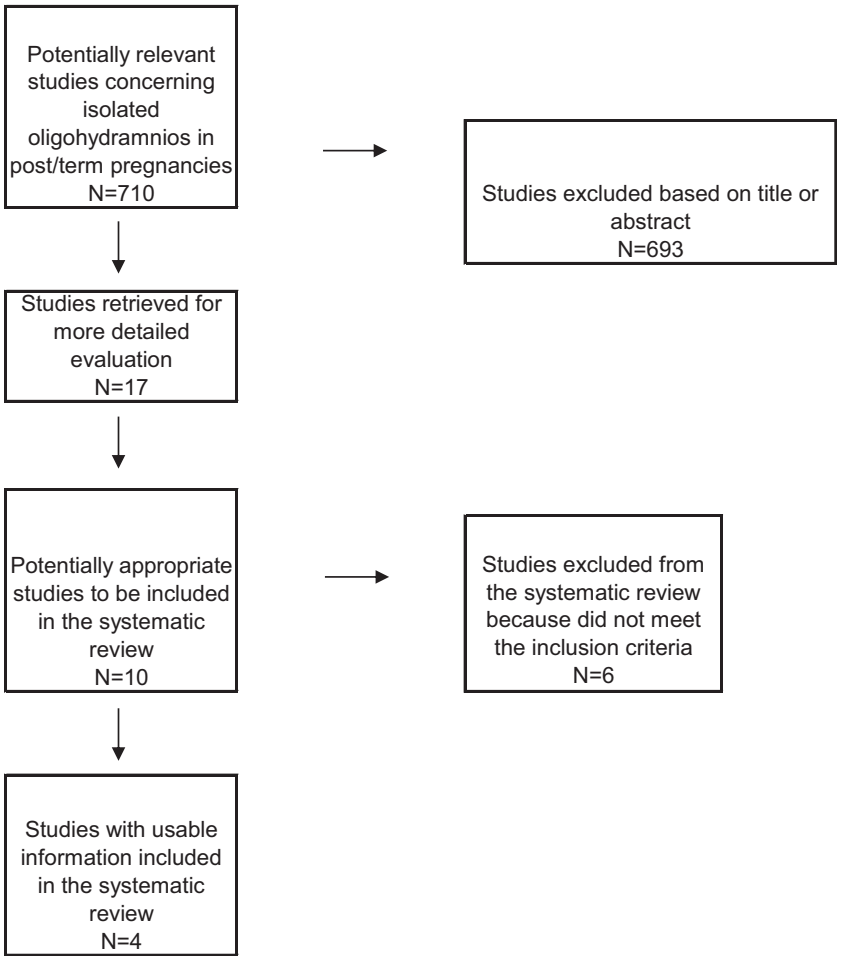

Fig. 1. flow chart for study selection.