FETAL OUTCOMES IN PREGNANCIES COMPLICATED BY TYPE 1 DIABETES MELLITUS TREATED WITH MULTIPLE DAILY INJECTIONS OF INSULIN AND INSULIN PUMPS

A SYSTEMATIC REVIEW AND META-ANALYSIS

Introduction

Uncontrolled type 1 diabetes (T1DM) can be a leading cause of congenital malformations and stillbirths. With control of maternal hyperglycaemia during pregnancy, the risk of congenital malformations is reduced. Maternal diabetes is associated with increased perinatal mortality,

In clinical practice, glycaemic control in patients with T1DM is approached either by multiple daily insulin injections (MDI) or continuous subcutaneous insulin infusion (CSII). A meta-analysis of CSII compared to MDI based on four separate studies recorded a 1.6% difference between the two arms (RR = 1.16 [0.94; 1.41]).

Method

Systematic search was conducted in database of scientific literature (EMBASE, EMBASE CENTRAL, Cochrane Library) using search terms: ((diabetes mellitus) AND (diabetes insipidus)) OR ((maternal diabetes) AND (gestational diabetes)). Results of this search were supplemented with additional studies from references to the included papers.

Population: pregnant women with T1DM who received insulin therapy before pregnancy, matched for age, BMI, and smoking history.

Intervention: regular human insulin (RHI) or rapid-acting insulin analogs (RAA) administrated via MDI or CSII. Studies included in meta-analysis were defined as follows: (1) a randomized controlled trial; (2) at least two arms; (3) at least 100 patients per arm; (4) at least 10% of study population; (5) at least 10% of cases presented according to the 5-point Jadad score and was downgraded mainly due to open-label design.

Population of respective studies ranged from 22 to 688 patients and the total number of 17 studies reported the risk of macrosomia using heterogeneous percentiles (25, 50, 75) across the studies.

Results

Large of gestational age and macrosomony

USA was reported in 23 studies existing between 1920-2015, and in most of these was defined as infants with birth weight above the 90th percentile. The mean (SD) birth weight in T1DM patients was presented, while some women did not present the definition of the macrosomia. Selected estimate from an overall sample indicate significantly higher risk of birth >90th percentile when compared with MDI strategy (RR = 1.12 [1.01; 1.25]), with no statistically significant differences between T1DM patients treated with RHI and RAA strategy (RR = 1.10 [0.94; 1.27]; Fig 2).


References