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Serum uric acid as a prognostic marker for neonatal outcomes

Deepika Kapil[1], Uday Mahajan[2]
[1] Departments of Obstetrics and Gynaecology, Civil hospital Nagrota bagwan, Himachal Pradesh, India
[2] Senior Resident, Department of Medicine, Dr Rajendra Prasad Govt. Medical College, Kangra at Tanda, Himachal Pradesh, India

Abstract
Objective: The significance of serum uric acid levels in predicting neonatal outcomes. Methods: Eighty pregnant women who reported to the antenatal OPD at 17-20 weeks of period of gestation were enrolled in the study over the period of one year from Jan 2018 to Dec 2018 at Department of Obstetrics & Gynaecology Dr Rajendra Prasad Govt. Medical College, Kangra at Tanda, Himachal Pradesh, India.
Results: Out of the 3 preterm deliveries, all of them had serum uric acid >3.5 mg/dl. In term deliveries 39 had serum uric acid >3.5 mg/dl and 37 had serum uric acid less than 3.5mg/dl. In present study there was no still birth. There were 3 NICU admission for neonatal jaundice. Out of three NICU admissions 2 had serum uric acid >3.5 mg/dl and 1 had serum uric acid level <3.5 mg/dl. In present study no baby had APGAR <7 minute at 1 minute and 5 minute**.**
Conclusion: Serum uric acid is useful in predicting neonatal outcomes.

Keywords: serum uric acid, IUGR

Introduction

During pregnancy, maternal metabolism must satisfy the demands of the developing fetus in addition to the energy requirements of the mother. The maternal lipid metabolism is specifically altered during pregnancy; cholesterol and phospholipids are increased moderately, while plasma triglyceride levels rise markedly [1]. Uric acid, a product of the xanthine oxidase reaction, decreases by 25–35% in early pregnancy but increases toward normal concentrations near term in normal pregnancy [2]. Studies have shown that abnormal metabolism may be a potential contributor to endothelial cell dysfunction [3]. Uric acid can also induce endothelial dysfunction and insulin resistance [4]. Additionally, it was reported that first trimester hyperuricemia increased the risk of developing GDM and mild preeclampsia, independent of body mass index (BMI) [5], and was associated with lower birthweight in normotensive women [6]. In this study, we measured the concentrations and uric acid in the serums of a cohort of healthy women in mid-second trimester, and followed-up the pregnancy outcomes. The predictive values of these metabolic markers for adverse pregnancy outcomes were analyzed, in order to testify whether these maternal metabolic markers can be used to predict adverse neonatal outcome.

Methods

Eighty pregnant women who reported to the antenatal OPD at 17-20 weeks of period of gestation and who fulfilied the inclusion criteria and were willing to participate in the study were enrolled in the study. Between 17 and 20 weeks of gestation, serum uric acid levels were measured. Participants were then followed until delivery. All the neonates born to the mothers were enrolled and given essential newborn care. A detailed neonatal examination, APGAR score, perinatal morbidity and mortality, neonatal morbidity and mortality was recorded. All the details of mother and neonate were recorded in a prescribed Precoded Performa (Annexure).

Normal Range of Investigation

Serum uric acid levels-3.5 mg/dl

Results

In the present study the incidence of preterm deliveries was 3.75% and the incidence of term deliveries was 96.25%. The incidence of NICU admission was 3.75%. And data on one baby was missing. There was no still birth. There was no baby with APGAR <7 at 1min and 5 min**.** Out of the 3 preterm deliveries, all of them had serum uric acid >3.5 mg/dl. In term deliveries 39 had serum uric acid >3.5 mg/dl and 37 had serum uric acid less than 3.5mg/dl.
In present study there was no still birth. There were 3 NICU admission for neonatal jaundice. Out of three NICU admissions 2 had serum uric acid >3.5 mg/dl and 1 had serum uric acid level <3.5 mg/dl. In present study no baby had APGAR <7 minute at 1 minute and 5 minute**.**

Table 1

Relationship of Perinatal Outcomes With Serum Uric Acid Levels		
Perinatal Characterstics	**Serum Uric ACID> 3.5 MG/DL**	**Serum Uric Acid <3.5MG/DL**
Preterm	3	0
Term	39	37
Still Birth	0	0
APGAR<7 AT 1 Min	0	0
APGAR<7 AT 5 Min	0	0
NICU Admissions	2	1

Discussion

In the present study the incidence of preterm deliveries was

3.75%. In a study conducted by Baweja *et al* [7] the incidence of preterm deliveries was 3.75%.

Out of the three preterm deliveries, all of them had serum uric acid >3.5 mg/dl. In term deliveries thirty nine had serum uric acid >3.5 mg/dl and sixty four had serum uric acid less than 3.5mg/dl. In a study conducted by Laughon *et al* [8] 9% patients had preterm deliveries and uric acid was more than 3.5mg/dl in 7% patients.

In present study there was no still birth, there were three NICU admission for neonatal jaundice. Out of three NICU admissions two had serum uric acid >3.5 mg/dl and one had serum uric acid level <3.5 mg/dl.

In present study no baby had APGAR <7 minute at 1 minute and 5 minute.

Conclusion

Serum uric acid can be used to predict neonatal outcomes.

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