Short Note

A Child Born Late: Neonatal and Paediatric Compilations Related to Post-Dated Pregnancy

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A Child Born Late: Neonatal and Paediatric Compilations Related to Post-Dated Pregnancy

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Abstract: This article presents a narrative review of neonatal and paediatric complications in post-dated pregnancy and covers scientific views on the aetiology, pathology, risk factors, symptoms and complications of post-dated pregnancy. A pregnancy extending beyond 42 weeks of gestation is termed as a post term pregnancy. There are multiple complications that can occur in the perinatal period, some of the most common ones are stillbirth, asphyxia, meconium aspiration syndrome, fetal distress syndrome, etc which are found to be greater in post-dated pregnancy and hence ultimately leads to increased mortality and morbidity of the new born. Studies have shown that post-term pregnancy also causes increased risk of developing behavioural and emotional problems in children of paediatric age group. It is surprising not much importance has been given to the maternal and neonatal consequences of post- term pregnancies. It is not well understood why some women experience post-dated pregnancies. It is found that factors such as hormones and genetic build up, are responsible for causing post-term pregnancy in an obese female. The treatment and management of a post-term pregnancy still poses a challenge to clinicians in determining the right choice and right time for a particular intervention so that both mother and fetus can be prevented from having complications.

Keywords:- neonates; pediatric group; complications; post-dated pregnancy

Introduction

The problems of premature as well as post-term pregnancies are extremely important, as they can cause complex complications such as perinatal disease and death. The issues faced in these pregnancies not only affect the neonatal health but also has consequences for the mother who gave birth. To date, problems faced in post term pregnancies have been given less attention than preterm births but post-term pregnancies must not be neglected as it increases fetal and maternal risks especially during delivery. Clinicians should be mindful of these risks and its consequences during treatment and management.

Definition

Post term pregnancy is defined as a pregnancy that has extended to or exceeded beyond 42 weeks of gestation (294 days), or estimated date of delivery (EDD) + 14 days (ACOG, 2004). The synonymous terms used for post term pregnancy is post-dated and prolonged pregnancy.

Epidemiology

Studies have found that of all pregnancies, the incidence of post-term pregnancies is about 7% [1]. On the contrary, the prevalence varies according to population type and management of health practices prevalent in the area. Population factors affecting the prevalence include the number of primigravida, prevalence of obesity in pregnant females, prior incidence of post-term pregnancy and genetics along with the awareness of antenatal care in pregnant female. In addition to this, local health practices and management such as number of required/ scheduled antenatal visits, early ultrasound for dating, elective caesarean section rates and availability of health services to the population in remote areas also affect the rate of post term pregnancy.

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Aetiology

The aetiology of post term gestation still remains unclear. Dating of pregnancy by using the last menstrual period is based on an assumption that the menstrual cycle of the female is regular, 28 days long and ovulation occurs at day 14, and hence can lead to errors in diagnosis of a term pregnancy as post-term pregnancy by overestimating the gestational age. This miscalculation can be reduced by doing early ultrasonography and proper antepartum surveillance and hence decreases the number of falsely classified term pregnancies as post term pregnancies.

Pathogenesis

The pathogenesis of post term pregnancy also remains difficult to understand. It is clear that mechanisms of parturition somehow fail to trigger in post term pregnancies. Mechanisms of hormonal interactions with mechanical and inflammatory processes in placenta play a vital role. It is found that the rise in levels of corticotrophin releasing hormone (CRH) is slower in post term pregnancies. This can be due to an inherited predisposition due to polymorphism in gene pathway linking CRH and birth. It is also found that a normal tissue response to hormonal signal is also affected by change in phenotypic characteristic of the mother.

Risk Factors

Some risk factors associated with post-term pregnancies are:

- Primigravida female
- Prior case of post term pregnancy[2]; [3]; [4]
- male fetus [5]
- obesity[6] ; [7]
- hormonal factors and genetic predisposition[8]

Other conditions such as delayed pregnancy, history of chronic inflammatory diseases, endocrine diseases, menstrual cycle disorders, cervical incompetence, placental hypoplasia and insufficiency and low water content are also considered to be associated with post-term pregnancy. Placenta is thought to play an important role in steroidogenesis in the later stages of pregnancy. Along with that, the hormonal disturbances and imbalance observed in delayed pregnancies affects the onset and course of labor in the female. Clinicians must be vigilant about the characteristic decrease in thickness of placenta on a USG which denotes decreased placental function.

Adverse Effects and Complications

Maternal Complications

Despite the gravity of the maternal complications, they are often taken lightly. There are increased chances of developing labor dystocia, severe perineal tear injury due to macrosomia and need for operative vaginal delivery. There is a two time rise in the requirement for a caesarean delivery, though lifesaving, can also lead to developing complications such as infections like endometritis, haemorrhage and thromboembolic disease. In addition to that, we also have to consider the emotional impact of a prolonged pregnancy, weeks beyond the EDD (estimated date of delivery). Studies have found that complications such as perineal tear injuries, emergency caesarean sections, haemorrhage and infections increase increases beyond a period of 39 weeks of pregnancy. Statistics and clinical data have suggested that the rise in maternal complications has led to the rise in requirement of operative measures.

Fetal and Neonatal Complications

Stillbirth, asphyxia, and birth trauma are among the common fetal and neonatal complications occurring due to delayed pregnancy. The risk of neonatal morbidity and mortality further increases if the pregnancy extends beyond 43 weeks.

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The perinatal mortality rate at 42 weeks of gestation is twice than at term delivery. It rises up to 4 times at 43 weeks and 5 to 7 times at 44 weeks. It has been theorized that the underlying causes for increasing perinatal mortality rates are utero-placental insufficiency, meconium aspiration and intrauterine infection. Studies have suggested that there is a sharp increase in fetal and neonatal mortality rates after 40 weeks of gestation[9] due to the above causes.

Perinatal morbidity also rises after a pregnancy has crossed the term period extending beyond 41 weeks. The reasons for increased morbidity are meconium aspiration syndrome, passage of meconium, macrosomia and dysmaturity. It is also observed that post-term pregnancy is itself a risk factor for low umbilical cord Ph levels, low Apgar scores, neonatal encephalopathy, and infant death in 1st year of life.

Meconium aspiration syndrome occurs when the fetus breaths in meconium and amniotic fluid and hence can cause respiratory compromise in the fetus which can present with the symptoms of tachypnea, cyanosis, and reduced pulmonary compliance. It is more commonly seen in post term neonates.[10]

Post-term infants can either present with macrosomia or with dysmaturity syndrome. Fetus is considered as macrosomic when the fetal weight exceeds or is equal to 4.5 kg (ACOG, 2000). It is associated with multiple complications of its own such as prolonged labor, severe perineal tissue lacerations, cephalopelvic disproportion and shoulder dystocia. Shoulder dystocia in itself is associated with increased risk of injury such as brachial plexus injury leading to erbs palsy and other neurologic complications such as cerebral palsy[11]; [12]

On the contrary, some post-term fetuses develop dysmaturity syndrome. Here the infant appears similar to an infant suffering from chronic intrauterine growth restriction due to placental insufficiency[13]; [14], hence the infant appears similar to a malnourished and small for gestational age (SGA) infant. The characteristic features of these type of presentation are loose skin, due to lack of fat, especially over thighs and buttocks, with prominent skin creases and long nails. Vernix caseosa is decreased or absent. They have thick scalp hair growth but sparse lanugo. These infants also present with the appearance of increased alertness and a wide-eyed look. Both the macrosomic and SGA infants have increased risk of developing perinatal asphyxia. There is also an increased risk of umbilical cord compression due to oligohydramnios, intrauterine passage of meconium and other complications such as hypoglycemia and seizures.

Post term infants are more prone for developing respiratory complications such as low Apgar score ≤3, perinatal asphyxia (based on ACOG), respiratory insufficiency, bronchopulmonary dysplasia, pneumothorax, pneumomediastinum, pneumopericardium, tachypnea, apnea, pulmonary hemorrhage and neonatal intensive care unit (NICU) admission than term infants which is an indirect measure of perinatal asphyxia.

Not only this, post term pregnancy also affects the developmental and behavioural aspects of the infant. Adverse outcomes such as birth trauma can lead to subdural, subarachnoid hemorrhage, tentorial tear, etc can lead to brain injury. Post-term birth is also associated with increased risk of neonatal encephalopathy, seizures and death. Though the long-term consequences are still unclear, some studies found that the post-term born infants did not differ from controls/term infants in development of general intelligence, physical milestones and illnesses. However, a recent study found that effects of developing a neurological or developmental disorder prevailed at the age of 5 years in 13% of children born post-term.

Considering all these complications, there has been various studies regarding the treatment and management of post-term pregnancies to prevent or decrease the extent of harm caused to the mother and the fetus or newborn. Various practices such as proper dating of pregnancies through early USG, antenatal checkups, knowing when to induce labor or perform a caesarean section, etc have been taken into consideration to prevent the extention of pregnancy beyond a safe gestational age.

Conclusion

Post term pregnancies being associated with multiple fetal, neonatal and maternal complications including morbidity and perinatal mortality, must not be underestimated at all. A few years ago,

because of inaccurate pregnancy dating and less prevalence of health management facilities led to relatively increased complications. But with the use of better means such as early ultrasound for dating of pregnancies, the rate of post-term pregnancy has decreased due to better and early diagnostic capacities of the new methods. Along with that, the new practices of earlier intervention and inducing labor earlier at 41 weeks appears more appropriate management to reduce the incidences of possible maternal and fetal complications

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