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Manual of

Understanding High Risk Obstetrics

Beginners Delights

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Contents

1. **CTG Guidelines and Intrapartum Fetal Surveillance 1**
   Shailja Pinjala

2. **Understanding Acid-Base Balance and the Role of Additional Tests of Fetal Well-being to Reduce False Positive Rate of CTG 11**
   Surekha Tayade

3. **Mother with Diabetes in Labor 15**
   Aruna Kumar

4. **Blood Transfusion: When, Where and How? 19**
   Charmila Ayyavoo

5. **Instrumental Delivery 23**
   Hemant Deshpande

6. **Labor Ward Drills: Postpartum Hemorrhage 27**
   Sheela V Mane, Vinutha N

7. **Kangaroo Mother Care 31**
   Saroj Agrawal

CHAPTER 3

Mother with Diabetes in Labor

Aruna Kumar

Pregnancy is a special time in a woman's life when she is coping with the anxiety of the pregnancy, delivery, and welfare of the fetus. This waiting period becomes even more anxiety-producing, if the pregnancy is complicated with any high-risk factors one of which is diabetes.

Diabetes mellitus is a syndrome of multiple etiologies characterized by chronic hyperglycemia with disturbances of carbohydrate, fat, and protein metabolism resulting from defects in insulin secretion, insulin action or both.

Since the earliest description of diabetes which was in ancient Egypt civilization records the world has witnessed the exploding epidemic of diabetes. Today India has the second largest number of people with diabetes in the world. It also constitutes one of the most common and significant complications of pregnancy.

The Saint Vincent's Declaration in October 1989 targeted the achievement of pregnancy outcomes in diabetic women to approximate those of non-diabetic women within the forthcoming 5-year period. This was not only the summary statement of the meeting organized by WHO and the International Diabetes Federation, but also a challenge to all clinicians and researchers interested in diabetes in pregnancy and labor.

For any disease, measurement is the first step that leads to control and improvement in the disease.

"If you can't measure something, you can't understand it. If you can't understand it, you can't control it. If you can't control it, you can't improve it"

–H James Harrington

What to test and how to test in diabetes in pregnancy is the first unresolved dilemma in the diagnosis and management of diabetes in pregnancy.

In both medical forums and academic research, community of clinicians and researchers has been too engrossed in fine-tuning the diagnostic criteria. There is still a lot of controversy regarding diagnostic criteria and the utility of universal screening in GDM, but Government of India endorses single step procedure for screening and diagnosis of GDM by 2 hour 75 g post-blood sugar level ≥140 mg/dL.

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Diabetes was an affliction with a dismal prognosis. The dominant philosophy of the period before 1850 was that a successful pregnancy was virtually impossible when compromised by untreated diabetes. Maternal risks of GDM include polyhydramnios, pre-eclampsia, prolonged labor, obstructed labor, cesarean section, uterine atony, postpartum hemorrhage, infection and progression of retinopathy which are the leading global causes of maternal morbidity and mortality.

Fetal risks include spontaneous abortion, intra-uterine death, stillbirth, congenital malformation, shoulder dystocia, birth injuries, neonatal hypoglycemia, and infant respiratory distress syndrome. But with the discovery and use of insulin, a new hope arose for diabetic women and their reproductive potential. With the introduction of insulin, maternal mortality fell dramatically, and perinatal mortality decreased over time. However, the introduction of insulin did not ameliorate the problems of macrosomia and the associated traumatic injury to mother and fetus as well as continuing complications such as neonatal hypoglycemia, congenital malformations, preeclampsia, and infection.

If we want to change our minds, we must change our exposure.

The modern era in the management of diabetes in pregnancy began in the 1960s with the introduction of reliable chemical and physical measures to assess gestational age, fetal well-being, and placental function: ultrasonography and biophysical profile became routine in the management of high-risk pregnancies. With proper use and interpretation of these tests sudden intrauterine death and neonatal death were reduced.

With the introduction of new technology: that is, self-monitoring blood glucose, continuous blood glucose insulin pumps, and continuous blood glucose monitoring, control of blood sugar concentrations could be improved, and adverse maternal and neonatal outcomes declined.

The results of this technology and other corroborating evidence led to intensified glucose management to as close to non-diabetic levels as possible.

Except for coronary artery disease, pregnancy has not been shown to be contraindicated in diabetic women with vascular complications.

Scientific evidence demonstrates that self-management education with self-monitoring blood glucose is the cornerstone of care for all pregnancies with diabetes. Government of India has laid down clear-cut guidelines for the management of diabetes in pregnancy starting from screening of the disease, diagnosis, management, antenatal care including special obstetric care keeping in mind the glycemic control during pregnancy, abnormal fetal growth monitoring and fetal surveillance.

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Why, when, and how to deliver the pregnant diabetic patient are fundamental questions in the management of diabetes in pregnancy. Reasons for elective delivery include prevention of stillbirth, fetal overgrowth, macrosomia, and shoulder dystocia.

The care provider's decision on the optimum time to deliver the infant in the pregnancy complicated by diabetes needs to balance between the perceived risk of late intrauterine death and shoulder dystocia and the consequences of unnecessary prematurity and cesarean section delivery. GOI recommends delivery at or after 39 weeks of gestation in a well-controlled diabetes whereas timing of delivery to be individualized depending on other associated obstetric complications and fetal macrosomia.

The main concern in vaginal delivery is the occurrence of shoulder dystocia. Assessment and documentation of the pelvis, fetus, and uterine contractility is imperative before initiating augmentation of labor. Elective cesarean section for the pregnant diabetic patient should be actively considered if the EFW is ≥4000 g.

The goal of intrapartum glycemic control is maintenance of maternal euglycemia. Intrapartum maternal hyperglycemia is directly related to fetal hypoglycemia. Even in the presence of poor antepartum glycemic control, tight control of plasma glucose levels appears to significantly reduce the incidence of neonatal hypoglycemia. Therefore, careful attention should be given to the administration of dextrose solutions and to insulin administration during labor.

Every health professional who cares for women of reproductive age must be concerned with issues of gestational and pregestational diabetes. These include fetal macrosomia, congenital malformations, spontaneous abortions, and also, complications arising because of obesity, hypoglycemia, hypertension, including retinopathy and nephropathy.

Women with diabetes have right to have healthy children while addressing the complications of their own disease. A comprehensive understanding and firm foundation in the knowledge of the potential disease complications will positively alter the success rate for both mother and infant.

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