ORIGINAL ARTICLE

Infant of Diabetic Mother Immediate Problems and Outcome

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ABSTRACT

Background: The purpose of study was to anticipate their instant problems and outcome of diabetic mother. Infant of diabetic mother IDM are infants born to women who are already diabetic or who develop diabetes during pregnancy or who are not obvious diabetic but they have impaired glucose tolerance.

Aim: To determine the risk factors of the disease and the treatment of the patient. Moreover morbidity and mortality in IDMs can be reduced by fetal monitoring, choosing appropriate mode of delivery and immediate care of infant after birth.

Methods: A descriptive type of study on IDM was conducted in Neonatology unit of Fatima Memorial hospital for one year period, 80 cases of infants of diabetic mother to known diabetic mothers OR mothers having gestational diabetes. Those Infants born to mother who are not-diabetic .

Results: Most common problem was hypoglycemia occur in about 31 % or infants. The second common problem was Hyperbillirubinemia that developed in 27.5 % of infants. Four infants out of eighty got trauma during delivery and infants whose APGARS were low and have birth asphyxia were 17.5%. Hypoglycemia was another common problem and accounts in 15% of IDMs. Out of 80 infants who were observed for problems and outcome 20% infants remain asymptomatic and 80% became sick and 3.7% expired.

Conclusion: From this study it is determined that the most common problem was hypoglycemia which develop individually or associated with other problems, second common problem was hyperbillirubinemia. Pre maturity may be the contributing factor because morbidity was more in pre mature infants. Other thing which was observed is that most of the infants delivered through C-section while instrumental deliveries were and infants delivered through SVD.

Keywords: Infant of diabetic mother (IDM), Glucose challenge test (GCT), C-section, SVD

INTRODUCTION

Diabetic has long been related with maternal and perinatal morbidity and mortality. Before the discovery of insulin in 1922, diabetic women rarely reached the reproductive age or survived pregnancy, Infect, pregnancy termination was recommended routinely for pregnant diabetic patient because of high mortality rates. Infants born to mother with glucose intolerance are at an increased risk of morbidity & mortality. The level of risk is related to gestational age at the appearance of an abnormal glucose test (GCT).

When diabetic women become pregnant or any women develop gestational diabetes, there are problems for mother as well as fetus and neonate after birth. The problems can be divided as maternal-fetal problem and neonatal problems. IDMs are on great risk of developing different problems and these problems may cause further complications that adversely affect the infant and their outcome. Once the pregnant women labeled as diabetic either known diabetic or having gestational diabetics or are pre diabetic, high attention should be given to mother and also fetus. Management should be started from antenatal period.

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MATERIALS AND METHODS

Descriptive study was applied and 80 cases of infants of diabetic motherwas taken. In which we determine the Infants born to known diabetic mothers or mothers having gestational diabetes and those .Neonates not delivered in Fatima Memorial Hospital.

This Study was carried out in Neonatology unit of Fatima Memorial Hospital, Shadman, and Lahore. Active system of data collection will be applied which include Patient detail history regarding name, sex date of birth, data of discharge, address and birth and maternal history regarding Diabetes, Impaired glucose tolerance test, Obstructed labour and Meconium stained liquar antinatal problem (PIH, pre eclemcia) Poly hydroamnios, Fetal distress, Control of boold glucose and also find the mode of delivery :SVD, C-Section Instrumental delivery.

APGAR-Score: Gestational age: Resuscitation: general physical examination: Problems to be

detected like macrosomia, hypoglycemia, hypocalcemia, polycythemia, birth asphyxia, birth injuries, hyperbillirubinemia, congenital anomalies, renal vein thrombosis, convulsion or jitteriness.

RESULT

Immediate problems in IDMs

Problems	n
Macrosomia	20(25%)
RDS	6(7.50%)
TTN	6(7.50%)
Birth Trauma	4(5%)
Hyperbillirubiuemia	22(27.50%)
Polycythemia	1(1.25%)
Hypocalcaemia	12(15%)
Congenital anomalies	6(7.50%)
SGA	2(2.50%)
Sepsis	10(12.50%)
Birth Asphyxia	14(17.50%)

Outcome of IDMs

Symptomatic	n
Morbidity	64(80%)
Mortality	3(3.75%)

IDM according to G.A

	n
<37 weeks	13(16.25%)
>37 weeks	67(83.75%)

IDMs According to Birth Weight

Problems	n
>4 KG	23(28.75%)
3.00 to 3.999 KG	52(65%)
2.500 to 2.999	2(2.50%)
1.500 to 2.499	3(3.75%)

Morbidity of IDM according to Sex

Male	30(37.50%)
Female	34(42.50%)

Morbidity of IDM according to Weight

Weight	n
>4	20(25%)
3.00—3.999 kg	40(50%)
2.500—2.999 kg	1(1.25%)
1.500—2.499 kg	3(3.75%)

Morbidity of IDM according to G.A

G. Age	n
<37 weeks	52(65%)
>37 weeks	12(15%)

Mortality according to Sex

Sex	n
Male	2(2.50%)
Female	1(1.25%)

Mortality according to weight

Weight	n
>4 Kg	1(1.25%)
3.00—3.999 Kg	-
2.500—2.999 Kg	-
1.500—2.4999 Kg	2(2.50%)

Mortality according to G.A

G. Age	n
> 37 wks	1(1.25%)
< 37 wks	2(2.50%)

Mode of Delivery of IDM

Mode of delivery	n
SVD	20(25%)
Instrumental	13(16.25%)
C/S	47(58.75%)

DISCUSSION

Descriptive study conducted on IDMs in Neonatology Unit of FMH. The purpose of this study was to anticipate the immediate problems in IDMs and their outcome. The common problem it is seen that it was hypoglycemia (31%). Every infant born to diabetic mother was monitored for blood glucose level, some of them have low level of blood glucose < 4 mg/dl but no symptoms and some have symptoms with low blood glucose level. In most of infants hypoglycemia was also associated with other problems. Infant who have only low plasma glucose without symptoms their hypoglycemia settled with feeding but infant with symptoms or those with other problems or infants which did not tolerate feed, needs I/V glucose infusion.

The second common problem observed in hyperbillirubinemia (27.5%). The infants hyperbillirubinemia which exceeds the physiological range were included in this group. This was associated with other contributing problems. All these infants need phototherapy, no exchange transfusion required.

25% of infants were macrosomic and have their weight more than 4 Kg. Out of these one have fracture femur and one Erb's Palsy, two have haematoma and bruises. One of them have incisional cut on scalp. Hypocalcemia was the other common problem (15%) and seen in sick infants.

During my study it is observed that in 80% of these sick infants pre mature infants (< 37 wks) have more problems 65% as compared with mature. In which morbidity was 15% .Female infants were more affected 42.5% than male that were 37.5%. Weight of most of infants fall between 3.00 to 3.99Kg Twenty infants were >4Kg and weight of 1 infant was within 2.5 to 2.99 Kg while 3 infants between 1.500 to 2.499Kg.

In the study of 80 infants 20 IDMs remained asymptomatic their blood glucose monitored for 24 hours of age, those remained normal, they shifted to mothers. Remaining 80% infants became sick and developed more than one problem. 3 infants out of these 80% sick infants expired. Mortality rate in my study became 3.7% .The1 infants expired due to MAS and PFC, 1 infant due to pre maturity with birth asphyxia and 1 infant with pre maturity and RDS. 2 expired infants were male and 1 was female . It was also seen in study that mortality was more in pre matures in which 2 infants were low birth weight 1 weighing 1.5 Kg and other 1 was 2 Kg and weight of 1 infant was > 4 Kg.

In IDM under study more infants delivered through C- section i.e. 58.75%, 25% through SVD and 16.25% were instrumental deliveries.

CONCLUSION

The study was conducted in neonatology unit of FMH and 80 infants of diabetic mother were observed. It is concluded that the most common problem was hypoglycemia which develop individually or associated with other problems, second common problem was hyperbillirubinemia.. Pre maturity may be the contributing factor because morbidity was more in pre mature infants. Hypocalcemia was also associated with other problems, isolated hypocalcemia was not observed.

In infants who died pre mature were more .it is also observed that problems due to congenital anomalies are very negligible. This suggests that with good control of blood glucose in first trimester we can reduce the risk of congenital anomalies. It is suggested that with good and careful maternal management, the pregnancy can be prolonged upto term and this will reduce the risk of morbidity and mortality in IDMs. Through proper and blood glucose monitored hypoglycemia can be detected early before it causes symptoms and it can be managed by feeding rather intravenous glucose. In the same way with careful examination & observation, problems can be anticipated early and managed accordingly and outcome of IDMs can be improved.

REFERENCES

1. Evers IM. Bos AM, Aalders AL, van Ballegooie E, de valk HW, van Door maal J5, terBrugge HG, Visser GH,.Pregnency in women with dibetes mellitus type 1: maternal and perinatal complications, inspite of good glucose control. Ned TijdschrGeneeskd 2000 Apr 22-144(17):804-9.
2. Mello-G; Parrettri-E, Mecacci-F, at al: Risk factor for fetalmacrosomia: the importance of of a positive oral glucose challenge test, Eur-J-E-n docrinol 1997 September; 137(1): 27-33.
3. Jhon P. Cloherty, M.D Stark Ann R, M.D. Maternal conditions that affect the fetus, Diabetes mellitus; In: Manual of Neonatal Care; 4th ed: Philedelphia, Lippincott-Raven, 1998: 11-12.
4. Michael de Swiet, Geofforey Chamber Lain. Medical disorders in pregnency: diabetes, thyroid disease, epilepsy: Turnbulls; Obstetric, 2nd ed: Churchill livingstone. 1995: 383-391.
5. Wu-Py. Infant of Diabetic mother: A continuing challenge for perinatal neonatal medicine. Acta-paediatr-sin. 1998 Sep-Oct; 37(5): 312-9.
6. Sajid M. Infant fo diabetic mother. In: Sajid M, Hodge W. Hand book of neonatal care. Lahore: Neonatal Unit of Sheikh Zaid Hospital ,2000: 111-15.
7. Deniel L, Edelstone: Fetal growth and development. Rudolf Pediatrics 19th ed: Prentice-Hall International Inc: 1991: 151-153.
8. Thomas L Gross, Honor M Wolf. Normal fetal growth. Medical therapy in pregnency. 2nd ad: Appleton and Lange; 1992: 186-198.
9. Yajnik CS, Coyaji K.J, Joglekar CV. Insulin Resistance: The necessary evil for fetal growth? Ped Res 2001; 50(supp1): 25A.
10. Mark A, Sperling. Hypoglycemia. In: Beherman, Kleigman, Jenson, Nelson, Text book of pediatrics, 16th ed: Philadalphia; WB Saunders, 2000: 439-441.
11. Artal R, Dough N, Wup, Sperling MA. Circulating catecholamines and glucagon in infants of strictly controlled diabetes mellitus, Biology of the neonate 53, 1988: 121-125.
12. Aynyslay G.A. The infant of diabetic mother. In: Roberton, NRC. Text book of neonatology.2nd ed:philadelphi;churchill living stone, 1992:333-7.
13. Hagedom, Marryl, and Gardener, Sandra L. hypoglycemia in the newborn, part 1:pathophisiology and nursing management. Molker baby journal, vol.4, no.1, january 1999, pp. 15-21.
14. Hatters ley At, Tooke JE. The fetal insulin hypothesis: an alternative explaination of the association of low birth weight with diabetes and vascular disease. Lancet 1999; 353: 1789-92.
15. Victor Blanchette; John Doyle; Barbara Schmit; Alvin Zipursky. Hematology: Isoimmune hemolytic disease. Gorden B Avery, textbook of neonotology. 4th ed. J.P Lippincott; 1994: 962-965.
16. Arif MA. Infant diabetic mother in Haneef SM, Sajid M, Arif MA. Text book of paediatrics. Lahore: international book bank, 2000: 1999-2000.
17. Hod M, Meizner I. Diabetes in pregnency. Ann 1st super sanita 1997. 33 (3): 317-22.
18. KleigmanM .infant of diabetic mother . in :Beherman, Kleigman, Jenson Nelson, Text book of pediatrics, 16th ed: Philadelphia; WB Saunders, 2000: 532-33.
19. Cataleno PM, Thomas AJ, Huston LP, Fung CM. Effect of meternal metabolism on fetal growth and body composition. Diabetes Care 1998;supp1 2:1385-90.
20. Thilo EH, Rosenberg AA. Infant of diabetec mother in : William HW, Anthony HR, Myron LJ, Judith SM. Current Paediatrics diagnosis and treatment, 14th ed: Stamford; Appleton & Lange. 1993:33.
21. Anon. Hyperinsulinimia and macrosomia. New EnglanJournal of Medicine 323, 1990: 340-42.
22. Stoll BJ, Kleigman RM. The fetus and neonatal infant; Theandocrine system. Beherman, Kleigman, Jenson, Nelson, Text book of pediatrics, 16th ed: Philadelphia;WBSaunder, 2000.534.
23. C. Kirby Heritage, MD. Infant of diabetic mother. In : Neonatology; a Lange clinical Mannual, 2nd ed: California; Appleton & Lange, 1992:330.