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Blood glucose and electrolytes (Ca; Mg; Ph) in infant of diabetics mothers admitted to King Fahad Hospital-NICU-Baha

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Abstract

Infants of diabetic mothers (IDM) have a nearly 30-fold decrease in morbidity and mortality rates since the development of specialized maternal, fetal, and neonatal care for women with diabetes and their offspring.

This study was conducted in neonatal intensive care unit (NICU) of King Fahad Hospital-ALBAHA during the period from January 2017 to June 2018.

In our study hypoglycemia was found in 51.9%,and low serum calcium in 8 neonates(29.6%).

Key words: blood glucose, serum calcium, serum magnesium, serum phosphate

INTRODUCTION

Infants of diabetic mothers (IDM) have a nearly 30-fold decrease in morbidity and mortality rates since the development of specialized maternal, fetal, and neonatal care for women with diabetes and their offspring. Before that, fetal and neonatal mortality rates were found to be as high as 65%.(1)

During pregnancy uncontrolled blood glucose level during third trimester will lead to fetal macrosomia, hypoxia, polycythemia, and cardiac anomalies like cardiomegaly with outflow tract obstruction.(2)

Fetal macrosomia (>90th percentile for gestational age or >4000 g in the term infant) occurs in 15-45% of diabetic pregnancies. It is mainly occurred as a consequence of maternal hyperglycemia and also impaired fetal growth may occur in as many as 20% of diabetic pregnancies. (3)

Maternal uncontrolled diabetes mellitus during pregnancy increased risk of respiratory distress syndromes (RDS) and the need for respiratory support.(1)

Hypoglycemia presented within the first few hours of life. In spite the infant is generally asymptomatic, and the overall risk of is 25-40%, with LGA and preterm infants at highest risk.(4) Hypocalcemia or hypomagnesemia may also be apparent in the first few hours after birth. Symptoms may include jitteriness or seizure activity. Hypocalcemia (levels < 7 mg/dL) is believed to be associated with a delay in parathyroid hormone synthesis after birth.(1)

METHODOLOGY

This study was conducted in neonatal intensive care unit (NICU) at King Fahad Hospital-ALBAHA during the period from January 2017 to June 2018.

All infant delivered to diabetic mother admitted to the NICU were enrolled in the study.

Weight was measured to all admitted neonates and classification to Average for Gestational Age (AGA), Small for Gestational Age(SGA) and Large for Gestational Age(LGA) was done according to the centile charts of weight to length. Infants born at the 90 percentile for age (gestational age) are considered LGA while babies born between 10 to 90 percentile

Institute, were considered AGA and less than 10 percentile as SGA.

Blood glucose was measured for all enrolled neonates at admission every 6 hour for the first 24 hours. Serum calcium, magnesium and phosphate was measured at 24 hours of age.

RESULT

We studied 27 neonates to mothers with diabetes mellitus, all of them admitted at King Fahad Hospital Intensive Care Unit(NICU)-ALBAHA.

Seventeen neonates (63%) were delivered by emergency caesarian section, 9 neonates (33.3%) were delivered by elective caesarian section and one neonate was delivered by spontaneous vaginal delivery, figure[1].

Those who delivered with average for gestational age (AGA) were 20 neonates (74.1%), large for gestational age (LGA) were 6 neonate (22.2%) and small for gestational age (SGA) was one neonate(3.7%),figure[2].

Figure [3]: Sixteen neonates (59.3%) were delivered preterm and 11 neonates (40.7%) were delivered term.

Figure [8] showed that 10 neonates (37%) given surfanta and needs mechanical ventilation, 9 neonates (33.3%) given surfanta and needs CPAP, 3 neonates(11.1%) need only CPAP, 3 neonates(11.1%) given surfanta only and 2 neonates (7.4%)did not need any respiratory support.

Normal blood glucose was found in 13 neonate(48.1%) and low blood glucose in 14 neonates(51.9%).figure[4].

Normal serum calcium was found in 19 neonate(70.4%) and low serum calcium in 8 neonates(229.6%).figure [5]

Normal serum magnesium was found in 24 neonate(88.9%) and low serum magnesium in 3 neonates(11.1%).figure [6]

Normal serum phosphorus was found in 26 neonate(96.3%) and low serum phosphorus in one neonates(3.7%).figure[7]

Figure 1

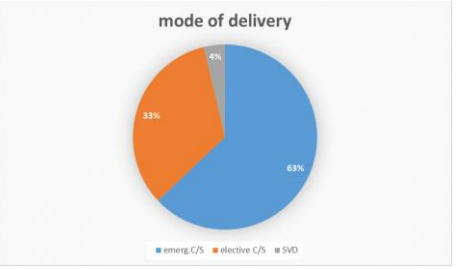
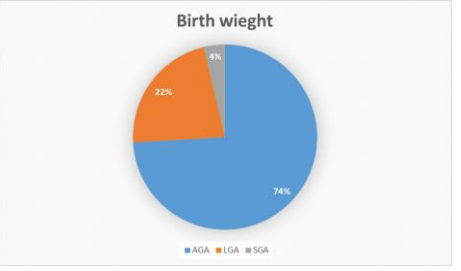


Figure 2



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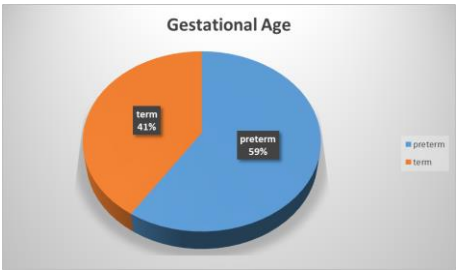

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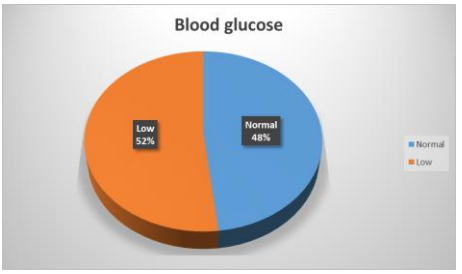
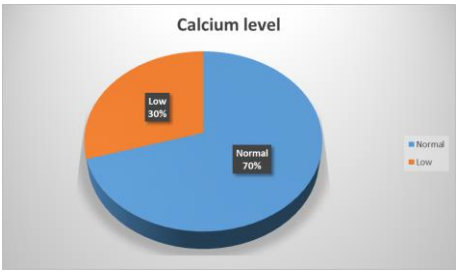


Figure 5



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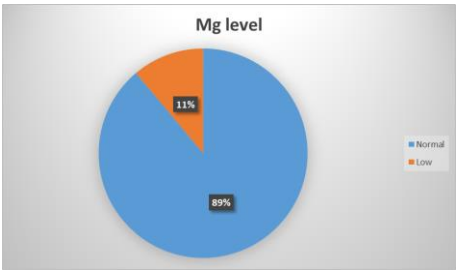

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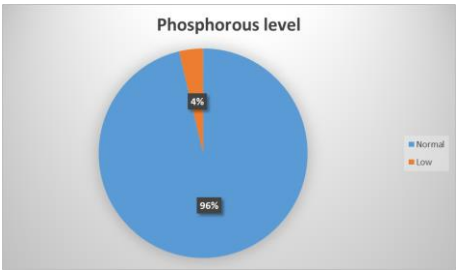
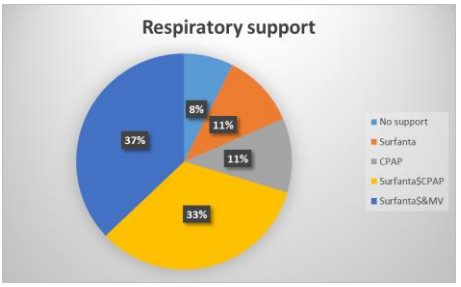


Figure 8



DISCUSSION

It is a hospital based study. We included 27 neonates admitted to NICU following delivery to mothers with diabetes mellitus during pregnancy.

Hypoglycaemia is the most common cause of morbidity in the Infants of Diabetic Mothers and can be a challenging and protracted problem to manage.

In our study hypoglycemia was found in 51.9% of our admitted neonates which is higher than study done by Mohammed Hussian et al, in Pakistan(5)as they had 23.8% and our finding also is high than international reports for hypoglycemia in infants of diabetic mothers(6)

Study done by Opera *et al* (7)in Nigeria found hypoglycemia in 63.8% which is higher than our study. This high percentage reflects poor diabetic control during pregnancy.

In our study hypocalcemia was found in 29.6% and in Opera*et al*(3) study it was found in one patient, also several studies reported hypocalcemia in infant born to diabetic mothers(8,9)

We found 22.2% of our admitted neonates were Large for Gestational Age (LGA). Study done in Suadi Arabia in Qatif Central Hospital by Al-Dabbous IA *et al* showed 57.9% had LGA(10) suggesting poor diabetic control during pregnancy.

Respiratory support in the form of giving Surfanta, Continuous Positive Airway Pressure (CPAP) and Mechanical

ventilation was done to 92.6% of our admitted neonates as most of them had respiratory distress needed intervention. In Mohammed Hussian et al(5), study respiratory problem like TTN and meconium aspiration syndrome(MAS) was found in 14.9%.

CONCLUSION

In this study hypoglycemia, hypocalcaemia, LGA and newborns who need respiratory support had high frequency. We need to follow diabetic mothers during pregnancy to reduce the incidences of complications.

REFERENCES:

1-https://emedicine.medscape.com/article/974230-overview
2- Plagemann A. A matter of insulin: developmental programming of body weight regulation. *J Matern Fetal Neonatal Med*. 2008 Mar. 21(3):143-8.
3- Boney CM, Verma A, Tucker R, Vohr BR. Metabolic syndrome in childhood: association with birth weight, maternal obesity, and gestational diabetes mellitus. *Pediatrics*. 2005 Mar. 115(3):e290-6.
4-Plagemann A, Harder T, Rodekamp E, Kohlhoff R. Rapid neonatal weight gain increases risk of childhood overweight in offspring of diabetic mothers. *J Perinat Med*. 2012 Sep. 40(5):557-63.
5-Mohammed Hussian et al; Frequency of Various Neonatal Complications in Infants Born to Diabetic Mothers - A Hospital Base Study. JPMI 2011 Vol. 25 No. 03 : 227 – 232
6-Confidential Enquiry into Maternal and Child Health. . Pregnancy in women with type-1 and type2 diabetes in 2002-07. London; CEMACH 2007.

7-Opara PI, Jaja T, Onubogu UC. Morbidity and mortality amongst infants of diabetic mothers admitted into a special care baby unit in Port Harcourt, Nigeria. Ital J Pediatr 2010; 36:77.

8-Cordero L, Landon MB. Infant of diabetic mother. Clin Perinatol 1993;20:635-48.

9. Nasrat HA, Salleh M, Ardawi M, Ghafouri H. Outcome of pregnancy in diabetic mothers. Int J Gynaecol Obstet 1993;43:29-34.

10-al-Dabbous IA et al. Perinatal morbidity and mortality in offspring of diabetic mothers in Qatif, Saudi Arabia.Eur J Obstet Gynecol Reprod Biol. 1996 Apr; 65(2):165-9.