



MORTALITY AND MORBIDITY PATTERNS IN AGA AND SGA PRETERM BABIES: HOSPITAL BASED STUDY

Paediatrics

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ABSTRACT

This study has been undertaken to assess the morbidity and mortality pattern of SGA and AGA preterm babies which will help in better understanding of their care in hospital settings. Methodology: All preterm babies delivered at NKPSIMS & Lata Mangeshkar Hospital between February 2011 to September 2012 were evaluated in terms of gestational age, gender, AGA/SGA, morbidity and mortality pattern. Results- In our study RDS (23.12%), Sepsis (34.69%), Hypoglycemia (12.24%) & Jaundice (38.09%) were major morbidity patterns. P value was significant in hypoglycemia (0.0412) and RDS (0.059). There was no difference in mortality rate between preterm AGA and SGA babies. Conclusion: Appropriate for Gestational age (AGA)/ Short for Gestational age (SGA), have no significant differences in morbidity & mortality Patterns.

KEYWORDS:

Preterm, Appropriate for Gestational age (AGA)/ Short for Gestational age (SGA), Morbidity, Mortality.

Introduction:

Preterm babies are important group of pediatric patients who require special attention. These babies are known to have increase risk of morbidity and mortality¹. About 9% of all births are premature births. In most of the cases the cause is unknown.

Survival for extremely premature infants has increased significantly during the last two decades. Complications of prematurity are becoming more common as more survivors are spending time in newborn intensive care units (NICUs)². There are multiple factors which result in either prematurity or intrauterine growth retardation. Immaturity of multiple organ systems places them at high risk for a variety of complications during these prolonged hospital stays. Studying the morbidity and mortality pattern for SGA and AGA babies can help in better understanding of their care in hospital settings¹. Preterms are live born infants delivered before 37 weeks from the first day of the last menstrual period are termed premature or preterm infants².

Preterm AGA – Premature but appropriate size for gestational age
Preterm SGA – Premature but with weight small for gestational age
The preterm babies (SGA or AGA) also carry increased risk of neonatal morbidity or complications¹

These complications includes –

- Respiratory distress syndrome (RDS),
- Intra ventricular hemorrhage (IVH),
- Sepsis, necrotizing enterocolitis (NEC),
- Patent ductus arteriosus (PDA),
- Hyperbilirubinemia,
- Feeding difficulties,
- Temperature-instability,
- Hypoglycemia, Hypocalcaemia.
- Retinopathy of Prematurity (ROP)

Aims and Objectives-

To determine

- Comparison of morbidity patterns in AGA /SGA preterm babies during NICU stay
- Percentage of mortality in AGA and SGA preterm babies

Material and Methods-

Inclusion criteria-

- All preterm babies delivered at NKPSIMS & Lata Mangeshkar Hospital between February 2011 to September 2012.

Exclusion criteria-

- Lethal congenital anomalies
- Preterm admission from outside
- Weight less than 500 gms.

If any interventions like ventilator, Continuous positive Airway pressure (CPAP), surfactant therapy etc required or not will be noted.

Statistical Analysis

The obtain data were statistically analyzed by applying descriptive (Mean, Standard Deviation, p-value) of significance of mean differences in term of various variable. We have entered all data in Microsoft Excel and further Statistical Analysis was done with the help of QI-Macros 2014 Software.

Methods

- Gestational assessment as per modified BALLARDS SCORING.
- AGA/SGA assessment by LUBCHENCO'S CHART.
- SGA Further classified as Symmetric & asymmetric by Ponderal Index
- Assessment of RDS by SILVERMAN-ANDERSON SCORING.
- Sepsis only culture proven cases taken
- Hypothermia – core temperature below for that gestational age.
- PDA – only ECHO proven
- Jaundice – only pathological jaundice considered
- IVH- CT Proven
- Resuscitation if APGAR below 7 at 1 minute.
- ROP as per Ophthalmologic Examination.
- Hypoglycemia – Random Blood Sugar (RBS) below 50 in symptomatic & below 40 in asymptomatic
- Polycythemia – Packed cell volume (PCV) > 65%

Results-

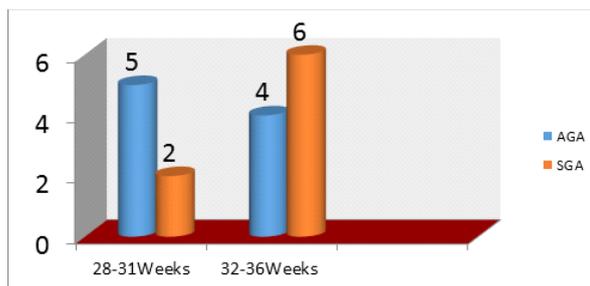
In our study, we examined total 147 babies from which 84 were AGA and 63 were SGA. Out of total 147 babies, males were predominated with 51% and females were 49%. In AGA babies males outnumbered with 58% of population while in SGA baby's females outnumbered with 58% of population. In total population, mean gestation age was 33.47 weeks while Mean gestation was found to be 32.91 weeks in AGA babies and 33.89 weeks in SGA babies. Overall mortality was 11.56% in entire population. Mortality rate was higher in SGA babies which were irrespective of gestational age. We attribute this contradiction to higher RDS % in SGA in our study which we managed without surfactant therapy.

Comparison of gestational age with AGA/SGA babies as shown in the table no. 1 & graph no. 1, 2, 3 & 4. Majority of SGA babies belonged to 35-36 weeks of gestation while AGA babies shared equality between 31-32 weeks and 32- 33 weeks.

Table no. 1: Showing correlation of AGA and SGA babies with Mean Weight, Gender, Mean Gestation and Mortality.

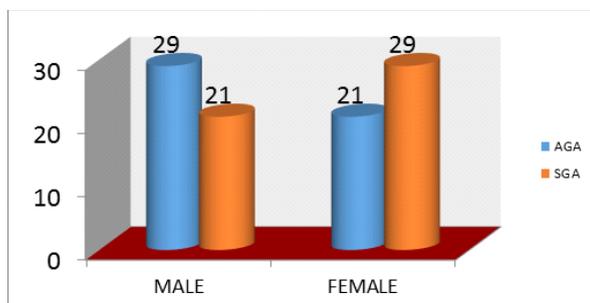
	AGA n=84	SGA n=63	TOTAL n=147, (AVG)
MEAN WEIGHT	1.72Kg	1.53Kg	1.61Kg
MALE	49(58%)	26(42%)	75(51%)
FEMALE	35(42%)	37(58%)	72(49%)
MEAN GESTATION	32.91Wks	33.89Wks	33.47Wks
MORTALITY	9(10.7%)	8(12.7%)	17(11.56%)

Graph no.1: Mortality as per Gestational age with AGA/SGA



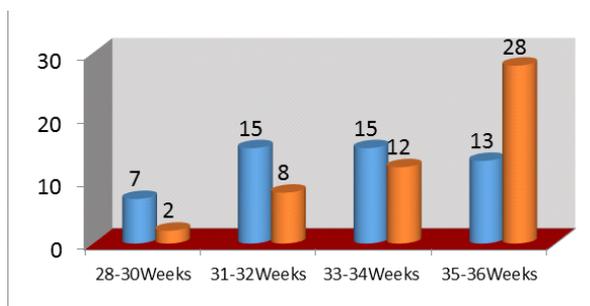
AGA- Appropriate for Gestational age, SGA- Short for Gestational age

Graph no. 2: Comparison of Gender with AGA/SGA



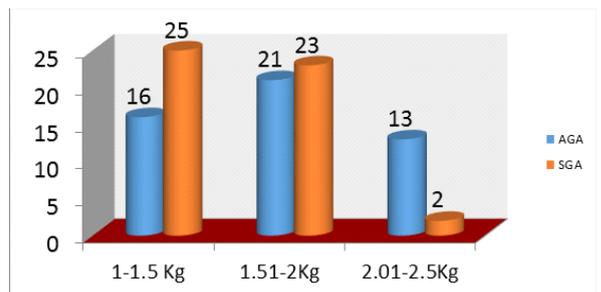
AGA- Appropriate for Gestational age, SGA- Short for Gestational age

Graph no.3: Comparison of Gestational Age with AGA/SGA



AGA- Appropriate for Gestational age, SGA- Short for Gestational age

Graph no. 4- Comparison of weight with Appropriate for Gestational age (AGA)/ Short for Gestational age (SGA)



AGA- Appropriate for Gestational age, SGA- Short for Gestational age

RDS (23.12%) , SEPSIS (34.69%), HYPOGLYCEMIA (12.24%)& JAUNDICE (38.09%) were major morbidity patterns seen in our study. P value was significant in hypoglycemia (0.0412) and RDS (0.059) as depicted in table no 2.

Table No.2 - Showing morbidities associated with AGA and SGA babies

	TOTAL n=147	AGA n = 84	SGA n=63	p- VALUE
HYPOGLYCEMIA	18 (12.24%)	6 (7.14%)	12 (19.04%)	0.0412 (S)
HYPOCALCEMIA	5 (3.40%)	3 (3.57%)	2 (3.174%)	0.897(N S)
SEPSIS	51 (34.69%)	30 (35.71%)	21 (33.33%)	0.80(NS)
JAUNDICE	56 (38.09%)	31 (36.90 %)	25 (39.68%)	0.78(NS)
ABO INCOMPATIBILITY	9 (6.12%)	6 (7.14%)	3 (4.76%)	0.56(NS)
EXAGGERATED	47 (31.97%)	27 (32.14%)	20 (31.74%)	0.96(NS)
HYPOTHERMIA	15 (10.20%)	9 (10.71%)	6 (9.52%)	0.823(N S)
VENTILATOR	15 (10.20%)	9 (10.71%)	6 (9.52%)	0.823(N S)
NEC	14 (9.52%)	10 (11.90%)	4 (6.34%)	0.28(NS)
MAS	5 (3.40%)	1 (1.19%)	4 (6.34%)	0.093(N S)
RDS	34 (23.12%)	14 (16.66%)	20 (31.74%)	0.059 (S)
ROP	9 (6.12%)	6 (7.14%)	3 (4.76%)	0.56(NS)
IVH	4 (2.72%)	3 (3.57%)	1 (1.56%)	0.47(NS)
PDA	9 (6.12%)	7 (8.33%)	2 (3.174%)	0.21(NS)
RESUSCITATION	18 (12.24%)	10 (11.90%)	8 (12.69%)	0.89(NS)
Death	5 (3.40%)	3 (3.57%)	2 (3.17%)	0.897(N S)

NEC- Necrotising Enterocolitis, MAS- meconium aspiration syndrome, RDS- Respiratory Distress Syndrome , ROP- retinopathy of Prematurity , IVH- Intraventricular Hemorrhage, PDA- Patent Ductus arteriosus

PDA(6.12%), ROP (6.12%), HYPOTHERMIA (10.20%) & VENTILATOR THERAPY (10.20%) were another causes contributing to morbidity in AGA/SGA Preterm babies. With improving care of preterm IVH(2.72%), MAS (3.40%)&HYPOCALCEMIA (3.40%) do not much contribute to morbidities and mortality in preterm.

In our study, requirement of RESUSCITATION was more in preterm SGA babies (12.69%) as compared to preterm AGA babies (11.90%). There was no difference in mortality rate between preterm AGA and SGA babies.

Discussion:

In present study 140 preterm babies were included, out of which 84 were AGA babies while 63 were SGA babies. In AGA babies males had predominating population with 58% while in SGA babies females had predominating population of 58%.

In our study we found that mortality was almost equal between preterm SGA babies and preterm AGA babies. A study done by Alberto et al found that Neonatal and infant mortality rates are remarkably high among preterm and SGA babies in southern Mozambique. These increased rates are concentrated within the neonatal period². Similarly RJ Baer et al also had the same interpretation that SGA babies have high infant mortality which demonstrates the importance of considering birth weight for gestational age when evaluating morbidity and mortality risks³. According to a study by Prof Joanne Katz ScD et al, The neonatal mortality risk of babies who were both preterm and SGA was higher than that of babies with either characteristic alone⁴. A study done by Puneet Sharma et al concluded that Premature SGA infants have significantly higher mortality, significantly higher risk of developing chronic lung disease and longer hospital stay as compared to premature AGA infants⁵. Similar findings were also observed by Mukesh Gupta et al, they reported according to weight for gestational age maximum morbidity was seen among preterm SGA babies and least in the term AGA babies⁶.

In our study we observed that incidence of Hypoglycemia (19.04%), RDS (31.74%) and Jaundice(39.68%) was more in preterm SGA babies while incidence of Sepsis (35.71%), Hypothermia (10.71%) and NEC (11.90%) was more in preterm AGA babies. A study done by Shreshtha et al showed that most common morbidity was clinical sepsis (66.7%) followed by hyperbilirubinemia (58.8%). The major cause of mortality was HMD (64.5%) followed by sepsis (58.06%) and NEC (25.8%)⁷. Study published in Indian Pediatrics article reported the highest (67%) incidence of hypoglycemia (serum glucose < 30 mg/dl) in preterm SGA group⁸. Similarly in our study we reported highest incidence of hypoglycemia (19.04%) in preterm SGA group. A study done by Muhammad T et al was suggestive of mean weight of SGA babies was significantly lower as compared to AGA babies and as compared to AGA babies, the SGA babies had a higher mortality and higher morbidity in terms of hyperbilirubinemia and hypocalcaemia⁹. While a study done by Nandini Bhasker et al concluded that ,apnea, RDS, NEC, IVH, jaundice needing phototherapy and hyperglycemia were found to be occurring more among the AGA babies in comparison to SGA babies whereas hypoglycemia and DIC were found more in the SGA babies in comparison to AGA babies¹⁰.

Conclusion -

- AGA and SGA Have No Significant differences in Morbidity & Mortality Patterns.
- AGA Babies Need More Of Ventilator And Surfactant Therapy Which Should Be Initiated as early as Possible considering their RDS score which should be monitored vigilantly.
- Sepsis ,The Main Killer Needs Prime Most Attention To Salvage Preterm Mainly AGA As They Are Already Handicapped With RDS/Ventilator Which Predisposes To Infection.

Limitation of the research

- Limited sample size
- Areas based research

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