Fetal Macrosomia .... What To Do?

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ABSTRACT

This is a two year retrospective review of 221 pregnancies that resulted in the delivery of an infant weighing 4000 gm or more (macrosomic babies). Women delivering macrosomic fetuses were significantly older, of high parity, obese (> 90 Kg) and had higher frequency of postmaturity than the control. The macrosomic infant was more often male and had more birth trauma and shoulder dystocia but not to a statistically significant level.

The method of delivery of a macrosomic baby should be individually considered as some women can achieve vaginal delivery of "very macrosomic baby" without significant increase in the maternal and perinatal mortality or morbidity, although in our series there was a relatively higher rate of delivery by caesarian section.

The dangers associated with delivery of macrosomic fetus have not received enough attention in the past due to over emphasis almost exclusively on the dangers associated with low birthweight infants[3,13]. In the past, perinatal mortality was used as the basis of judging the risk of delivery of a macrosomic infant[7,14,15]. The obstetric care of this particular group of infants must look beyond mortality statistics and consider morbidity, to include the incidence of asphyxia, trauma and meconium aspiration.

Some of the recent studies have not indicated or shown a significant higher perinatal mortality but some morbidity[12,3,8,16,17].

This report was conducted at King Abdulaziz University Hospital (KAUH) to determine the incidence of fetal macrosomia (weight > 4000 g or more), the maternal characteristics of the macrosomic infant, the fetal and maternal risks associated with the delivery of a macrosomic infant, and if primary elective caesarean section was indicated in all macrosomic babies.

METHODS

Between January 1, 1989 and December 30, 1990 at King Abdulaziz University Hospital, 4,034 infants were delivered. Two hundred and twenty one infants (5.5%) were macrosomic (above 4,000 gm). A control group of 221 infants whose gestational age was between 37-42 weeks and weighed between 2500-3999 gm born during the same period were selected. Twin pregnancy and congenital anomalies were excluded from the control group.

Factors which have significant association with fetal macrosomia, maternal characteristic and fetal outcome were identified and evaluated. The maternal age, parity, weight at booking, mode of delivery and complications at delivery were recorded. The apgar score and neonatal events mainly birth asphyxia and meconium aspiration were also recorded. The statistical analysis was performed using student's "t" test.

RESULTS

There were 62 Saudi women with macrosomic infant s in the study group (28.0%) and 85 in the control one (38.4%). Palestinian, Egyptian and Sudanese women had a tendency to have a large fetus (Fig 1). The average maternal age in the mild macrosomic group was 27.2 years; 30.4 years in the massive macrosimic group and only 24.2 years in the control group (Table 1).

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Table 1

Maternal characteristics of study and control group

		Control 2500-3999g	*Mild Macros 4000-4999*	*Massive Macros >5.000 g*	*P*		
					A	*B*	*C*
Number		221	208	13			
Mat. Age (yr)	Mean	24.9	27.2	30.4			
	SD	2.9	3.9	5.6	<.05	<.05	<.05
	Range	19-33	17-37	18-39			
Mat. Parity	Mean	3.8	3.8	5.8			
	SD	2.2	2.2	2.4	NS	<.05	<.05
	Range	1-12	1-12				
Weight (Kg)	Mean	69.4	76.4	88.6			
	SD	7.5	10.7	2.1	<.05	<.05	<.05
	Range	47-85	47-94	84-94			
Gestational Age at delivery (Wk)	Mean	38.8	40.0	41.1			
	SD	0.97	1.0	0.6	<.05	<.05	<.05
	Range	37-42	37-42	40-42			

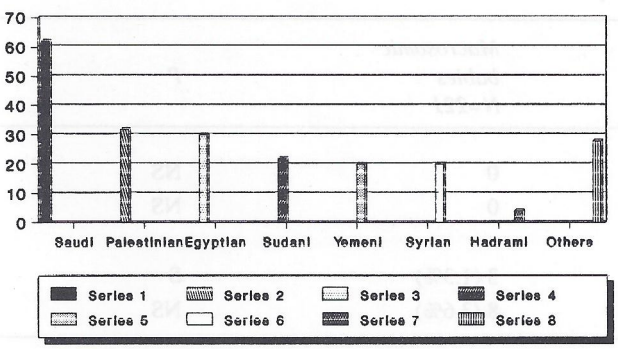

Figure 1: *Relation of infant birth weight to nationality of the mother.*

The difference in parity is statistically significant only between the control and massive macrosomia groups, it is insignificant between the control group and mild macrosomia[5,6].

Maternal Obesity (> 90 kg)

The mothers of macrosomic infants were likely to be obese (> 90 kg). The incidence of obesity was 9.6% in mild macrosomia and 15.3% in massive macrosomia, while in control only 4.9%, a difference which is statistically significant (Table 2).

Table 2

Frequency (%) of 3 maternal risk factors in mother having macrosomic fetus

Maternal risk factor	*Control group*	*Mild macro-somia*	*Massive macro-somia*	*P*	
				A	*B*
Gestational diabetes	4.0	5.7	7.6	0.6	0.4
Insulin D diabetes	1.3	1.9	0%	0.7	0.9
Obesity (> 85 kg)	4.9	9.6	15.3	0.1	0.2
Post-term	3.6	11.5	23.0	0.003	0.02

Diabetes Mellitus

The incidence of gestational diabetes was 5.7% and 7.6% in mild and massive macrosomia respectively, and 4.0% in the control group. The difference is statistically not significant[9-11].

For insulin dependent frank diabetes, the difference in incidence between the two groups was also not significant (Table 2).

For fetal and maternal complications, see Tables 3 and 4. For mode of delivery, refer to Tables 4 and 5.

Table 3
Fetal complications for macrosomic and control group

Complication	*Control*	*Mild*	*Massive*	*P*		
				A	*B*	
Shoulder dystocia	1.3	4.9	7.6	0.1	**0.2**	
Birth injuries	1.5	2	0	0.7	0.9	
Fetal death/1000	0	0	0	—	—	
Meconium aspiration	2.7	3.6	0	0.7	0.9	
				A	B	C
Apgar score at 5 minutes	M=9.1	M=8.8	M=8.9	<0.05	NS	NS

Table 4
Maternal Complications

	Control N=221	*Macrosomic babies N=221*	*P*
Maternal death	0	0	NS
Rupture uterus	0	0	NS
3rd degree perineal laceration	2 (0.9%)	3 (1.3%)	S
Postpartum haemorrhage	7 (3.1%)	8 (3.6%)	NS

Table 5
Mode of delivery

	Control N=221	*Macrosomic babies N =221*	*P*
SVD	194 (87.7%)	175 (79.1%)	0.02
Forceps	1 (0.4)	0	0.9
Ventouse	4 = 1.8%	6 = 2.7%	0.7
Caesarean section	22 = 10%	40 = 18%	0.02

Analysis of these figures show no significant increase in Caesarean Section rate in the study group.

Table 6
Indication of caesarean section in study group
N=40

Indication	*No. of patient*
Chepalopelvic diproportion	9
Failure to progress	5
Malpresentation	5
Fetal distress	10
Antepartum haemorrhage	3
Pre-eclampsia	3
Multiple indication	5
Total	40

Table 7
Indication of caesarean section in control group

Indication	*No of patient*
Fetal distress	8
Malpresentation	4
Antepartum haemorrhage	3
Hypertensive patient	2
Multiple indication	5
Total	22

There was slight but insignificant difference in the morbidity between the macrosomic infants delivered vaginally or abdominally (Table 8).

Table 8
Effect of route of delivery on perineal morbidity and mortality

	Macrosomic F delivered vaginally N=175	*Macrosomic F delivered abdominally N=40*	*P*
Fetal death	0	0	–
Birth injuries	4 (2.3%)	0 (0%)	0.4
Meconium aspiration	6 (3.4%)	2 (5%)	0.6
Apgar score < 7 at 5 minutes	8 (4.6%)	1 (2.5%)	0.5

DISCUSSION

Improved pregnancy outcome is the aim of all modern obstetric units nowadays. Perinatologists and neonataologists have reviewed many of the obstetrical problems contributing to the high infant morbidity and/or mortality. One of the problem is fetal macrosomia. The incidence of fetal macrosomia in our population is 5.5% which is comparable with some recent studies and varies widely from others, eg in Bengal 3.67% and in UK 8%[18,19].

Many factors have been involved in the development of fetal macrosomia including pre-pregnancy maternal weight, fetal sex, multiparity and maternal diabetes mellitus[1,2,5].

Maternal obesity (> 90kg) has been shown to be directly related to the infant birthright[3]. Fetal weight is also influenced by fetal sex; large birthright infants are more frequently male, due to unknown factors[4,7].

The correlation between maternal diabetes mellitus and the large fetus is well organised. Identification of pregnant diabetics and prevention of maternal pathological hyperglycaemia result in decreased incidence of infants weighing 4000 g or more, and also in reduction of perinatal mortality and morbidity[6,8].

We did not find a difference in the perinatal mortality with macrosomia as Boyd did[3]. Our two largest babies, weighing 5.340 g and 5.130 g respectively delivered spontaneously with good apgar score and without shoulder dystocia or sequelae in the neonatal period.

Maternal mortality and morbidity are not higher in women with macrosomic infant except for a higher incidence of third degree perineal laceration which can be reduced with better management of delivery.

Caesarean section does not seem to be significantly higher in macrosomic group than the control indicating

that the method of delivery should be individually considered in each case as some women can achieve vaginal delivery of "very macrosomic" baby without any increase in the perinatal and maternal mortality or morbidity.

CONCLUSION

From this study we can conclude that the incidence of fetal macrosomia is not low. Maternal mortality and morbidity is not higher in these women except the third degree perineal tear which can be reduced. Perinatal mortality is not higher in these babies. We do not recommend routine primary elective caesarean section for macrosomic baby for our women. However, proper assessment is mandatory before allowing vaginal delivery.

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