

Mortality rate of preterm neonates in two teaching hospitals in Teheran, Islamic Republic of Iran

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معدل وفيات المواليد الخدج (المبتسرين) في مستشفيات تعليميين في طهران ، إيران
معصومة فلاحيان ، وكاظم محمد ، وإدنا آغاي ، وعلي غاندي

تم استعراض سجلات ٥٧٣ من المواليد الخدج (المبتسرين) في دراسة ارتجائية أجريت في مستشفيات تعليميين في طهران . فتراوحت أوزان الأطفال عند الميلاد بين ٥٠٠ و ٢٥٠٠ غرام ، بينما تراوحت الأعمار الرحمية بين ٢٤ و ٣٦ أسبوعاً . ولقد أثبتت هذه الدراسة أن معدل الحياة المتوقع للمواليد يرتفع كثيراً إذا زادت مدة الحمل عن ٣٢ أسبوعاً ، وزاد وزن الوليد عند الميلاد عن ١٢٥٠ غرام . ولقد وُجد أن أصغر المواليد الأحياء كانت أنثى ولدت بعد عمر رحمي قدره ٢٦ - ٢٧ أسبوعاً وكان وزنها عند الميلاد ١٥٠٠ غرام . وكان أقلها وزناً ، أنثى وزنها ٧٨٠ غراماً وعمرها الرحمي ٢٨-٢٩ أسبوعاً . وقد بينت هذه الدراسة أنه كلما ازداد العمر الرحمي للمواليد الخدج (المبتسرين) ووزنهم عند الميلاد ، كلما انخفضت معدلات الوفاة بينهم انخفاضاً سريعاً .

In a retrospective study conducted in two teaching hospitals in Teheran, records of 573 preterm infants were reviewed. The birth weights ranged between 500 and 2500 grams, and the gestational ages between 24 and 36 weeks. This study indicated that the expected survival rate of neonates was greatly influenced by a gestational age of more than 32 weeks and a birth weight exceeding 1250 grams. The youngest surviving neonate was a female whose gestational age was 26-27 weeks and birth weight 1500 grams. The smallest surviving (in weight) was a female infant of 750 grams and a gestational age of 28-29 weeks. This study revealed that an increase in the age and weight of preterm neonates leads to a rapid decline in mortality rate.

Taux de mortalité des enfants nés avant terme dans deux centres hospitalo-universitaires de Téhéran, République Islamique d'Iran

Les dossiers de 573 enfants nés avant terme ont été examinés dans le cadre d'une étude rétrospective menée dans deux centres hospitalo-universitaires de Téhéran. Le poids à la naissance était compris entre 500 et 2500g et l'âge gestationnel entre 24 et 36 semaines. D'après cette étude, le taux de survie escomptée est grandement influencé par un âge gestationnel de plus de 32 semaines et par un poids de naissance supérieur à 1250g. Le plus jeune nouveau-né survivant était une fille qui avait un âge gestationnel de 26-27 semaines et un poids à la naissance de 1500g. Le survivant le plus petit (en poids) était une fille pesant 750g dont l'âge gestationnel était 28-29 semaines. Cette étude révèle que le taux de mortalité diminue rapidement lorsque l'âge et le poids des enfants nés avant terme augmente.

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Introduction

Based on the classification of the World Health Organization, a preterm neonate is an infant born prior to completing 37 weeks of gestation [1]; and the term "prematurity" should be used to describe such a condition. Preterm neonates are more likely to die than full-term infants, because the lower the birth weight the higher the mortality rate. If preterm neonates survive, they run a greater risk of being disabled [2].

Preterm infants who are small-for-gestation age have a lower birth weight than average, probably due to growth retardation. In the majority of cases, the precise cause or causes of the early delivery are unknown, but some factors predispose to preterm delivery, such as premature rupture of membranes (PROM), cervical incompetency and uterine anomalies [3].

The question is, at what time and at what weight should obstetrical interventions be performed? Apart from survival, the other important issue is the quality of life of the preterm infant. There may be both physical and psychological difficulties for such children. Today, with improved care of preterm infants, the mortality rate of these infants has declined dramatically, especially for those of 28 weeks or more and a weight of 1000 grams or more at birth.

Materials and Methods

In a retrospective study from 1985–1989, records of preterm infants at two teaching hospitals (Imam Hossein and Loghman Hakim Hospitals, of Shahid Beheshti University of Medical Sciences) in Teheran were examined. The weight of the infants varied from 500 grams to 2500 grams and their gestational age from 24 to 36 weeks. At these two teaching hospitals, there were

27 838 deliveries, and of these, 1892 infants weighed between 500 and 2500 grams; 299 were male and 274 female preterm infants.

The bases of determining the infant's gestational age were; 1) date of last menstrual period of the mother, and 2) ultrasonography of the fetus, the final decision being the combined judgement of the obstetrician and neonatologist.

Results

The results are shown in Tables 1–3. According to gestational age and birth weight, survival increases at or above 28 weeks and 1250 grams. Survival rates of neonates below these figures decline noticeably. At 24–25 weeks and 500–750 grams, no neonate survived. The youngest (based on gestational age) infant who survived was a 26–27 week female fetus with a birth weight of 1500 grams. The smallest surviving fetus was a 750 gram female with a gestational age of 28–29 weeks.

Approximately mortality was the same among male neonates (32.7%) as with female neonates (32.1%).

Discussion

Unfortunately, there are few studies of neonate survival based on gestational age carefully determined by an obstetrician. Gilstrap and co-workers [4] described survival and short-term morbidity of 105 infants born between 23 and 32 weeks of gestation, delivered during the period 1979–84. In their study, survival was possible at 24 weeks, but in our study it was not possible before 28 weeks. Gilstrap further ascertained that serious morbidity was more likely in neonates born between 24 and 26 weeks. Eight of every nine neonates had mild to severe

Table 1 Mortality rate of preterm neonates at two teaching hospitals in Teheran, 1985-1989

Birth weight (grams)	Gestational age (weeks)														Total
	24	25	26	27	28	29	30	31	32	33	34	35	36		
500-749	9/9 (100)	4/4 (100)													13/13 (100)
750-999	7/7 (100)	6/6 (100)	15/15 (100)	4/4 (100)	5/7 (71)	1/2 (50)	2/2 (100)	1/1 (100)			0/1 (0)				41/45 (91)
1000-1249	2/2 (100)	3/3 (100)	5/5 (100)	6/6 (100)	10/12 (83)	5/5 (100)	2/4 (50)	2/4 (50)	0/1 (0)	0/1 (0)	1/1 (100)	1/1 (100)			37/44 (84)
1250-1499				7/9 (78)	7/15 (47)	4/7 (57)	3/6 (50)	7/8 (88)	3/6 (50)	1/4 (25)	1/4 (25)	1/5 (20)	3/7 (43)		37/71 (52)
1500-1749			1/3 (33)	1/1 (100)	3/8 (38)	1/3 (33)	1/6 (17)	6/8 (75)	3/12 (25)	3/9 (33)	1/8 (13)	1/2 (50)	0/5 (0)		21/65 (32)
1750-1999			1/1 (100)	1/2 (50)	0/3 (0)	2/5 (40)	2/4 (50)	4/9 (44)	3/20 (15)	1/15 (7)	5/21 (24)	2/19 (11)	2/27 (7)		23/126 (18)
2000-2249							0/2 (0)	2/7 (29)	0/6 (0)	1/14 (7)	2/20 (10)	0/13 (0)	2/23 (9)		7/85 (8)
2250-2499									2/6 (33)	1/11 (9)	1/19 (5)	2/32 (6)	1/56 (2)		7/124 (6)
Total	18/18 (100)	13/13 (100)	22/24 (92)	19/22 (86)	25/45 (56)	13/22 (59)	10/24 (42)	22/37 (59)	11/50 (22)	7/54 (13)	11/74 (15)	7/72 (10)	8/118 (7)		186/573 (32)

In the body of the table the number of deaths is separated from the number of neonates by a "/" and the percentage of deaths is below between parentheses

Table 2 Mortality rate of preterm neonates at 500–2499 grams in two teaching hospitals in Teheran, Islamic Republic of Iran, 1985–89

Birth weight (grams)	Number of neonates	Mortality	
		Number	Rate (%)
500–749	13	13	100
750–999	45	41	91
1000–1249	44	37	84
1250–1499	71	37	52
1500–1749	65	21	32
1750–1999	126	23	18
2000–2249	85	7	8
2250–2499	124	7	6
TOTAL	573	186	32

Table 3 Mortality rate of preterm neonates at 24–37 weeks of gestation, in two teaching hospitals in Teheran, Islamic Republic of Iran, 1985–89

Gestational age (weeks)	Number of neonates	Mortality	
		Number	Rate (%)
24–25	31	31	100
26–27	46	41	89
28–29	67	38	57
30–31	61	32	52
32–33	104	18	17
34–35	146	18	12
36–37	118	8	7
TOTAL	573	186	32

intracranial haemorrhage, and seven also suffered from retrolental fibroplasia of varying degrees of severity.

The obstetrician must consider the survivability of the neonate, the ultimate effect of an operation on the mother and the quality of life possible for the neonate. Such important decisions are not made lightly.

Conclusions

The obstetrician faces the challenge of effecting delivery in such a way as to optimize the status of the neonate at birth so as to require less intensive care. Some neonates do survive when provided with prolonged intensive care [5], and that has created serious difficulties for the obstetrician in making decisions.

Although it is impossible to determine precisely the earliest possibility for survival of a preterm neonate, certain factors have definite influence on the necessary clinical decisions concerning that aspect. Two of these factors are the gestational age and the birth weight of the neonate. The obstetrician can give varying importance to these factors according to the expected outcome. Based on the findings of this study, it is reasonable to set the lower limit of gestational age at which the neonate can be expected to survive at 28 weeks. The similar lower limit for birth weight is 1250 grams.

References

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