The Reasons and the Possible Risk Factors of Admission of Newborn Babies to the Neonatal Care Units in Baghdad

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Abstract:-

Background: The patterns of morbidity of the neonate vary among different communities according to socioeconomic and medical factors.

Aim: To identify the reasons and the possible risk factors for neonate admission to the neonatal care unit.

Subjects and Methods: - A hospital based case- control study was conducted in Baghdad between 20 March 2005 and 15 August 2005. The study included 164 newborns admitted to neonatal care units of 3 teaching hospitals of pediatrics; it also included 164 healthy neonates who were attended three primary health care centers for BCG vaccination (this group was considered as the control group). The data was collected through interviewing the mothers, by using a special form of questionnaire; the data included information about the neonate, mother, pregnancy and delivery.

Results: Jaundice was the main reason for hospital admission (44.5%). The associated risk factors related to the baby were: male gender, LBW, Prematurity, age a week or (less).

The method of delivery, presence of congenital anomaly or the type of pregnancy was found to have no statistical significant relation ship with neonatal hospitalization.

The associated maternal risk factors were: low educational level, age of 20 years or less, inadequate antenatal care and presence of urinary tract infection and premature uterine contraction during pregnancy.

Key Words: -Reasons, Risk Factors, Neonate NCU

Introduction:-

The neonatal period comprises the first 28 days of life, in term of health and disease it is the single most important period in all of infancy and child hood during which the highest mortality occur[1].

Some newborns are considered high risk, this mean that anew born has greater chance of complications because of conditions occurring during labour and birth [2].

A high risk infant should be under close observation by experienced physician and nurse; approximately 9% of all births require special or neonatal intensive care unit [1].

There are many factors that can place a baby at high risk and increase chance of admission to neonatal care unit. These factors are either related to the mother such as: age, parity, low educational level and poor socio economic status[3], or pregnancy and delivery like vaginal bleeding, multiple gestation, preeclampsia, premature rupture of membrane, inadequate antenatal care and poor weight gain during pregnancy[3,4], while the delivery factors including forceps delivery, cesarean section and breech presentation[3,5]

In addition to these factors there are some neonates' characteristics which may also increase the possibility of complications and require hospital admission such as birth weight less than 2500 grams or more than 4000 grams, birth before completed 37 weeks or after 42 weeks of gestation and congenital anomalies [5, 6].

The present study was carried out to determine the reasons and the possible risk factors for neonate admission to neonatal care unit.

Subjects & Method:-

A hospital based case- control study was conducted in three pediatric hospitals in Baghdad which were: The child central teaching hospital, Al-Mansoor hospital and Al-Kadhymia hospital, during the period from 20th of March to 15th August 2005. 164 neonates admitted to the neonatal care units of the three mentioned hospitals were included in the study and considered as cases. An equal number of neonates attending three primary health care centers for BCG vaccination were included and considered as a control group. The control group included only those neonates who had never been admitted to hospital for any reason.

The data was collected by a direct interview with the mothers according to a special questionnaire form, to obtained information about the neonate, the mother, her pregnancy and delivery. The same questionnaire form was used for both cases and controls; in addition some of the information about the cases was obtained from the case record.

The statistical analysis was done using X^{2-} test; Odd's ratio and 95% confidence interval were also calculated. P- Value of less than 0.05 was considered significant.

Results:-

A total of 328 neonates had been enrolled in the present study, of whom 164 were cases and 164 were controls.

Jaundice (yellowish discoloration) was the main reason for admission to hospital, 73 (44.5%). Table1.

Table 2 shows the distribution of cases and controls according to some neonate characteristics. No congenital anomalies had been recorded among the controls, while among the cases, 17 (10%) of them had different types of anomalies.

The risk of hospitalization was 14.56 times higher among newborns delivered at home. The babies born by vaginal delivery were 1.2 times more likely to need neonatal care unit admission than those delivered by CS. Table3.

Table 4 show the distribution of cases and controls according to some maternal features, low educational level, age below 20 years and inadequate antenatal care during pregnancy were statistically significant related factors for neonatal admission to hospital.

Table-1: Distribution of cases according to reason for admission

Reason for admission	No.	%
Jaundice (yellowish dis coloration)	73	44.5
Fast &/ difficult breathing	36	22
Poor feeding	22	13.4
Premature	12	7.3
Listless	8	4.8
Granting	6	3.7
Frequent bowel motion	3	1.9
Fit	2	1.2
Congenital anomaly	1	0.6
Ecchy mosis	1	0.6
Total	164	100%

Table-2: Distribution of cases and controls according to some neonate characteristics

Variable	Cases n=164		Controls n=164		X^2; P	OR (95% CI)
	No.	%	No.	%		
Sex						
Male	107	65	95	58	9.76; 0.002	1.99 (1.26-3.14)
Female	57	35	69	42		
Age						
Hours <24	10	6	-	-	62.37; 0.0001	
Early neo-natal(day)	92	56	28	17		
Late neo-natal(day)	62	38	136	83		
Mean ±SD	7.88 ± 7.15		14.16± 7.49			
Gestational age						
Premature	39	24	7	4	25.89; 0.0001	7(2.95-19.08)
Full term	125	76	157	96		
Birth weight						
LBW	51	31	10	6	33.41; 0.0001	6.95(3.25-19.69)
Normal	113	69	154	94		
Type of pregnancy						
Twin	11	7	14	9	0.39; 0.533	0.77 (0.31-1.89)
Single	153	93	150	91		

Table 3:- Distribution of cases and control according to place and method of delivery

Place of delivery	Cases		Controls		X^2; P	OR (95% CI)
	No.	%	No.	%		
Home	35	21	3	2	30.48; 0.0001	14.56 (4.41-75.18)
Hospital	129	79	161	98		
Total	164	100	164	100		
Delivery Method						
C/S	57	35	64	39	0.64; 0.423	1.20 (0.75-10.93)
Vaginal delivery	107	65	100	61		
Total	164	100	164	100		

Table-4:- The distribution of cases and controls according to some maternal characteristics

Variable	Cases n=164		Controls n=164		X^2; P	OR (95% CI)
	No.	%	No.	%		
Age (year)						
>20	21	13	10	6	4.32; 0.038	2.27(1.98-558)
***20-40**	138	84	149	91		
>40	5	3	5	3	0.01; 0.90	1.08 (0.24 – 4.8)
Educational level						
Illiterate	18	11	7	4	54.67; 0.0001	
primary	70	43	19	12		
secondary	53	32	80	49		
Higher	23	14	58	35		
ANC						
Yes	138	84	138	84		
No	26	16	26	16		
ANC inadequate	61	44	44	32	4.44; 0.03	1.69(1.01- 2.85)
Adequate	77	56	94	68		
Total	138	100	138	100		

(*20-40 age groups are the reference group for comparison)

There was statistical significant association between urinary tract infection and premature uterine contraction and the need for hospital admission during neonatal period (P<0.05) table 5.

Neonatal jaundice was the main final diagnosis recorded among the cases 69 (42.1%) followed by RDS and septicemia which were 39 (23.8%) and 35 (21.3%) respectively.

Table-5:- The distribution of cases and control's mothers according to complication during pregnancy

Problems during pregnancy	Cases		Controls		X^2; P	OR (95% CI)
	No.	%	No.	%		
Anemia	39	51	29	54	3.38; 0.66	1.68 (0.93 – 3.06)
Urinary tract Infection and premature uterine contraction	13	17	4	7	6.45; 0.01	4.06 (1.19 – 17.6)
Hypertension	10	13	16	30	0.33; 0.563	0.78 (0.03 – 1094)
APH	5	7	1	2	3.55; 0.060	6.25 (0.68 – 29.3)
Threatened abortion	5	7	3	5	1.01; 0.314	2.08 (0.39- 13.73)

Discussion:-

The current study showed that jaundice was the main reason for admission to hospital, and this disagree with a previous study in Iraq[7], in which Prematurity was the main reason for admission and this could be due to the difference in the setting.

The sex of the newborn had statistical significant association with neonatal hospitalization, in that males were 1.99 times more prone to be admitted to NCU than females and this in agreement with other studies [7, 8], and this finding could be explained by the fact that male sex is more associated with neonatal morbidity and this could be due to chromosomal or genetic factors [9].

The risk of hospitalization was 7 times higher among premature than mature babies and this result is comp ratable to the results of other studies [7, 8, 10]. This finding could be explained by the fact that premature have less well developed immune system and immature organ function the specific disorders that caused the premature onset of labour [9].

The study also found a statistical significant association between low birth weight (LBW) and the risk of NCU admission, and this agree with other studies [11,12], and this is accepted since LBW neonates have a higher incidence of hospitalization for sequels of prematurely, infections and neurological complications[9].

The newborns delivered at home were 14.5 times more liable for hospitalization than those delivered at hospital, and this in agreement with previous studies in Iraq and else where[7,13], this finding could be explained by the fact that home deliveries usually managed by traditional birth attendance who are mostly not well trained and don't have the ability for rapid interventions in case of difficult or prolong labour, therefore the newborn will face many complications as a result of such delivery which will increase the chances for the need of hospital admission.

The low educational level of the mothers was a risk factor for neonatal admission to NCU and this finding is in agreement with others studies [14, 15].

The maternal age below 20 years was a significant risk factor, and this was also reported in other study [3]. This finding might be due to the fact that teenage pregnancies carry an increase risk for IUGR, LBW, fetal distress and intrauterine death [16], and all these factors are very well known as risk factors for neonatal morbidity and mortality.

Inadequate antenatal car during pregnancy was identified to be a risk factor for hospital admission among neonates and this result is in comparable to other studies [3, 17].

Urinary tract infection (UTI) during pregnancy was a significant associated risk factor for neonatal hospitalization and this is inagreemnt with other studies [7, 8]. This finding is due to the fact that UTI during pregnancy is a predisposing factor to premature uterine contraction and thus to premature delivery, also UTI is a predisposing factor to neonatal infection.

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