Risk Factors Of Preterm Birth of Neonates Attended Al- Mukalla Maternity and Childhood Hospital ,Yemen

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Abstract

The preterm birth continues to be the leading cause of prenatal morbidity and mortality. Neonates born preterm are known to have a certain added risk of death, disease, and disability.The aim of the present study is to identify risk factors associated with preterm birthof neonatesinAl-Mukalla Maternity and Childhood Hospital (MCH).Retrospectivecase-control study at a ratio of 1:1 was conducted in the neonatal unit of Pediatric Ward from October 2012 to October 2013, cases and controls data were collected from medical records.A total of 104 cases and 104 controls were included in the study. The results showed severalrisk factorssignificantly associated with preterm birth of neonateswhich are:bad obstetric history (BOH) ,with p value 0 .014, present maternal diseases including hypertension, pre or/and - eclampsia, urinary tract infection and genital infection(p value= 0.003, 0.002, 0.045, 0.002 respectively) as well aspresentof twins and antipartum hemorrhage (p value= 0 .000, 0.028respectively).We Concluded that the most common risk factors of preterm birth of neonate were BOH, Maternal diseases in current pregnancy as well as present of twins and antipartum hemorrhage. It is necessary to improve prenatal care for pregnant women which may decrease the potential of preterm birth of neonates.
Key wards:Preterm neonate, Risk factors,Al-Mukalla, Yemen.

Introduction:

Preterm birth (premature birth) is defined by the World Health Organization (WHO) as birth of an infantprior to 37 weeks' (259 days') completed gestation[23]. It iscontinues to be the leading cause of perinatal morbidity and mortality [9]. Infants born preterm are known to have a certain added risk of death, disease, disability, as well as longer-term motor, cognitive, visual, hearing, behavioral, social-emotional, health, and growth problems compared with normal-term infants [17,30].

Based on global reports, 60%–80% of neonatal mortalities (not accompanied by congenital abnormalities) occur in premature infants, resulting in asphyxia in the first week and septicemia in the fourth week.[6]. Previous studies have estimated that 11.1% of all live births are preterm worldwide, ranging from about 5% in several European countries to 18% in some African countries [3]

The underlying causes of preterm delivery are multiple and poorly understood.. It may include individual-level behavioral and psychosocial factors, neighborhood characteristics, environmental exposures, medical conditions, infertility treatments, biological factors, and genetics [2], many of these factors occurs in combination.

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Studies have revealed that mothers' education, age over 36, history of having a premature infant, multiparity, mother hypertension, infant diabetes, oligohydramnios polyhydramnios, placenta previa, anatomic abnormality of uterus, history of organic disorder (cardiac, renal, thyroid), and blood group type A have significant correlation with recurrence of premature labor.[7,21]

In other studies, the most prevalent risk factors leading to premature birth consist of insufficient pregnancy care (52%), mothers' age being under 20 (34.7%), third-trimester hemorrhage (23.4%), and eclampsia and preeclampsia (13.1%) [11,27] ,andthe most prevalent complications of preterm labor reported in infants include septicemia (66.7%), hyperbilirubinemia (58.8%), asphyxia (26.8%), and complications regarding the hyaline membrane (23.3%) [11.27].The aim of the present study is to identify the risk factors associated with preterm birth of neonates (in Al-Mukalla Maternity and Childhood Hospital (MCH)

Method and Materials:

This study was designed as retrospectivecase-control study, at a ratio of 1:1.It was conducted in neonatal unit of the pediatric ward in Al-Mukalla Maternity and Childhood Hospital (MCH) in Al-Mukalla city the capital of Hadhramout Governorate, Yemen. This Hospital is a tertiary care teaching hospital responsible for the care of all pediatric and mother patients coming from three Governorates; Hadhramout, Shabowa and Al-Mahra.

The data of cases and controls were collected through medical records during one year period from october2012 to October 2013. Cases were defined as preterm live neonates (29–<37 weeks). Controls were defined as a full-term live neonates (≥37 weeks).In general, pre-term cases were diagnosed in advance by the resident specialist in the hospital.The study was included 104 preterm a live neonates who areregistered during the study period (one year) and equal numbers of full term aliveneonates as control, registered during the same period.

The risk factors studied in this study were:Sex of baby, bad obstetric history (BOD) of motherincluding:{previous abortion, preterm labor,)parity (number of pregnancy primary or multi)}, maternal systemic diseases(Maternal diseases in current pregnancy)including {hypertension, preeclampsia- eclampsia, diabetes mellitus(DM),heart, renal diseases,anemia, urinary tract infection,and genital infection}and localizedcomorbiditiesincluding{ history of twins, anti-partum hemorrhage ,premature rupture of membrane (PROM), uterine anomalies, cervical incompetence, polyhydramnios and oligohydramnios.}The study was approved by the Ethics Committee ofthe hospital of child and mother in Al-Mukalla city.

Statistical Analysis

Thecollecteddata were entered into a computer and analyzed using SPSS version 20.0. Frequencies and percentage were calculated and presented in tables and graphs using Excel and Word programs. Chi square test was used to determine the association between preterm birth of neonateand potential predictor factorsand statistical significance was achieved when at $P<0.05$.

Results:

A total of 104 cases and same number for controls were included in the study. The male: female ratio was 1.1:1 with mild male predominance, without any significant association (p = value 0.890).The study demonstrated that there were statistically significant association between the case preterm birth of neonate and the bad obstetric history of mother (BOH) ,with p value = 0.014 (Table 1)

Table 1: Association between preterm birth of neonates and Sex, BOH and Party factors

Factors		Case N=104 F (%)		Control N=104 F (%)		P value
Sex	Male	55	52.9	54	51.9	0.890
	Female	49	47.1	50	48.1	
BOH	Yes	23	22.1	10	9.6	**0.014**
	No	81	77.9	94	90.4	
Party	Yes	31	29.8	44	42.3	0.060
	No	73	70.2	60	57.7	

The association between preterm birth of neonatesand presentmaternal systemic diseases factors are shown in Table No 2. The study showed that there were statistically significant association between the case preterm birth of neonate and the present maternal systemicdiseases including hypertension p= value 0.003, preeclampsia- eclampsia p value = 0 .002, urinary tract infection p = value 0.045, genital infection p value = 0.002, twins p value = 0 .000 and antipartum hemorrhage with p value = 0.028. While other factors (party, D.M, heart and renal diseases, anemia, PROM, uterine anomalies, cervical incompetence, and oligohydramnios) were not significant as factor for preterm birth of neonate.

Table 2: Association between preterm birth of neonates and present maternal systemic diseases factors

Factors		Cases N=104 F (%)	Controls N=104 F (%)	P value
Preeclampsia-eclampsia	Yes	26 25	9 8.7	**0.002**
	No	78 75	95 91.3	
Hypertension	Yes	11 10.6	1 0.9	**0.003**
	No	93 89.4	103 99.1	
D.M	Yes	11 10.6	5 4.8	0.118
	No	93 89.4	99 95.2	
Heart disease	Yes	1 0.9	2 1.9	0.561
	No	103 99.1	102 98.1	
Renal disease	Yes	0.0 0.0	3 2.9	0.081
	No	104 100	101 97.1	
Anemia	Yes	7 6.7	2 1.9	0.088
	No	97 93.3	102 98.1	
UTI	Yes	29 27.9	17 16.3	0.045
	No	75 72.1	87 83.7	
Genital infection	Yes	26 25	9 8.7	**0.002**
	No	78 75	95 91.3	

As shown in Table 3 there are significant association between preterm birth of neonate and the history of Twins and anti-partum hemorrhage(p value = 0.000 and 0.028 respectively).

Table 3: Association between preterm birth of neonatesandlocalized obstetric factors

Factors		Cases N=104 F (%)	Controls N=104 F (%)	P value
Twins	Yes	23 22.1	3 2.9	**0.000**
	No	81 77.9	101 97.1	
PROM	Yes	28 26.9	25 24.0	0.633
	No	76 73.1	79 76.0	

Anti-partum hemorrhage	Yes	20	19.2	9	8.7	**0.028**
	No	84	80.8	95	91.3	
Uterine anomalies	Yes	3	0.9	0	0.0	0.081
	No	101	99.1	104	100.0	
Cervical incompetence	Yes	2	1.9	1	0.9	0.561
	No	102	98.1	103	99.1	
Polyhydramnios	Yes	8	7.7	2	1.9	0.052
	No	96	92.3	102	98.1	
Oligohydramnios.	Yes	6	5.8	6	5.8	1.000
	No	98	94.2	98	94.2	

Discussion:

Preterm birth is a prevalent obstetric complication associated with significant neonatal mortality and morbidity worldwide. Addressing the burden of preterm birth in developing countries is of public health importance due to its high (9 to 16%) prevalence, though the exact etiopathogenesis of preterm birthis still unclear. In developing nations, prediction and/or diagnosis of this multifactorial process is made mainly based on the evidence reported in the western literature on the risk factors and proba-ble pathological mechanisms.5,10,32. Our study was designed as a matched case-control study, aimed to determined the risk factors ofpreterm birth of neonate in Al-Mukalla MCH.

The present study found that bad obstetric history (previousabortion,orpreterm laborwas significantly associatedwith preterm birth of a neonate, and this corresponding with many studies[9,32,24, 29].No significant association was observed in this study between preterm birth of neonate and parity. Some cross-sectional analyses have reported no effect of parity on the occurrence of preterm birth of a neonate [24, 4]. While others showed an association with high parity [15].

Systemic and localized maternal comorbidities factors were studded in the present study and it was found that there were significant associations of some of them. Maternal eclampsia and pregnancy hypertension is a status that is present in 5%–7% of all deliveries, and is correlated with main fetal disease and premature labor[13]. This study showed significant association betweenpreterm birth of neonateand pre or/ and eclampsia and hypertension which consentient with many previous studies [9,31,4,15,20,1,22].

Maternal Diabetes mellitus was found without any significant association with preterm birth of neonate and this finding corresponding with some studies[4,24] while many studies observed significant association[31,32,25,26].

Cardiovascular and renal disease factors did not show any significant association with preterm birth of neonates in the current study, as opposed to other studiesand this in contrary to other studies(15,25) this may be due to low numbers of cases and control with these maternal diseaseAlthough the number of cases with maternal anemia was higher than that in controls, there was not significant association found with preterm birth of neonatesin contrary to other studies (1, 19).Maternal Urinary tract infection was found to be a significant risk factor for preterm birth of neonates in this study, and this findings were similar with findings of other studies [4, 15, 24].

Ascending genital tract infections have previously been implicated as cause of preterm birth of neonates[24, 4, 8], our study observed corresponding finding.

Premature rupture of membrane (PROM) was also studied in this study and it was found that no significant association with preterm birth of

neonates, and this consentient with some studies [24] while other study observed significant association [31].

The presence of multiple pregnancy (twins) was observed in our study as highly significant factor associated withpreterm birth of neonatesand this was corresponding to other studies [4, ,24, 25].Antenatal hemorrhage as (placenta Previa orabruption placenta) was found to have significant association with preterm birth of neonatesand this consentient with many studies [15,19,18,20].

Uterine anomalies and cervical incompetence were considered as factors associated with of preterm birth of neonatein different studies [31,8,12,22], but our study not showed significant association ,this may be due to low numbers of mothers in the study complaining of them.

The present study revealed that there was no significant association between polyhydramnios and preterm birth of neonate which was corresponding to some other studies[7,9,14],as well as no significant association between oligohydramnios and preterm birth of neonatewhich was contrary to other studies [19,16, 28].

Conclusion and recommendations: in conclusion the most common risk factors of preterm birth of neonate were BOH, Maternal diseases in current pregnancy as well as twins and antipartum hemorrhage. It is necessary to improve prenatal care for pregnant women which may be decrease the potential for preterm birth of neonate.

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عوامل الخطر للولادة المبكرة لحديثى الولادة (الخدج) فى مستشفى المكلا للأمومة والطفوله- اليمن

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الملخص

ما زالت الولادة المبكرة هي السبب الرئيسي للأمراض والوفيات خلال الفترة الأولى للولادة. ومن المعروف أن حديثي الولادة المولودين قبل الأوان (الخدج) لديهم خطر إضافي معين من الموت، والمرض، والإعاقة. والهدف من هذه الدراسة هو التعرف على عوامل الخطر المرتبطة بالولادة المبكرة لحديثي الولادة (الخدج) في مستشفى المكلا للأمومة والطفولة –اليمن. أجريت دراسة استرجاعية لحالات مع ضوابط بنسبة 1:1 في وحدة حديثي الولادة لجناح الأطفال من أكتوبر 2012 إلى أكتوبر 2013، وجمعت بيانات الحالات والضوابط من السجلات الطبية. وشملت الدراسة 104 حالات و 104 ضوابط. أظهرت النتائج العديد من عوامل الخطورة ذات دلالة إحصائية ارتبطت بالولادة المبكرة لحديثي الولادة (الخدج) وهي: تاريخ الولادة السيئ (p value= 0014)، أمراض الأم الحالية بما في ذلك ارتفاع ضغط الدم، تسمم الحمل، عدوى المسالك البولية والعدوى التناسلية (0.002 , 0.045 and 0.002 ,0.003= p value على التوالى) وكذلك التوائم والنزيف في أثناء الحمل (0.028 and p<0.000 >pعلى التوالي). خلصت الدراسة إلى أن عوامل الخطورة الأكثر شيوعا للولادة قبل الأوان للخدج هى التاريخ المرضي السيء في أثناء الحمل السابق،أمراض الأم في الحمل الحالي وكذلك التوائم والنزيف في أثناء الحمل. من الضروري تحسين الرعاية الصحية للنساء الحوامل مما قد يقلل من احتمال الولادات المبكرة.

الكلمات المفتاحيه: الخدج حديثي الولادة ، عوامل الخطورة ، المكلا، اليمن.

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