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INCIDENCE OF POSTPARTUM ANEMIA AMONG POSTPARTUM PATIENTS IN EAST JEDDAH HOSPITAL

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ABSTRACT

Postpartum anemia (PPA) is an important health problem affecting women at Saudi Arabia, which increase the risk of maternal mortality and morbidity. There are many risk factors which can affect the incidence of postpartum anemia. In our study we shed the light on the incidence and the risk factors associated with this among patients who delivers in EJH. This study is retrospective cohort study for patients delivered at EJH from first of January 2018 to 30 of June 2018. The total number of cases is 1252, who had complete data and others were excluded. However, during the analysis, we just analyzed 250 cases. In our study, we selected definition of PPA is having Hb < 10 g/dl on day 1 after delivery. Our study showed that incidence of PPA is round 60% which is high in comparison with international figure (22-45 %). These findings shed the light on the urgent need to keep PPA monitor to adjust current strategies to control risk factors associated with PPA. There was a significant correlation between postpartum anemia and blood transfusion. Preterm gestational age, cesarean delivery, antenatal anemia were significant independent risk factors for postpartum anemia. It was found that postpartum anemia (PPA) was higher among those delivered through cesarean delivery and low among those delivered through vaginal route. So, we recommended to increase the patient awareness about risks associated with cesarean delivery and to have sufficient control on cesarean delivery by request. Antenatal anemia was significant risk factor for PPA. It might be due to poor nutritional quality of mothers and poor intake of iron therapy. PPA was less associated with postpartum complications as all of these complications due to vaginal deliveries and all cases who needed blood transfusion were diagnosed with postpartum anemia.

KEY WORDS: postpartum anemia (PPA), pregnancy, Jeddah, East Jeddah Hospital (EJH), Hemoglobin (Hb), Caesarean section (CS), Spontaneous vaginal delivery (SVD), Postpartum Hemorrhage (PPH), Antepartum Hemorrhage (APH)

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INTRODUCTION

Anemia during pregnancy is one of the most important physiological changes. Prepartum anemia can reflect on postpartum period, and it's one of the main causes of PPA, it's recommended to check the hemoglobin antenatal, intrapartum and postpartum to avoid complication which is one of the major complications that can increase the risk of maternal mortality and morbidity. Anemia is a condition in which levels of hemoglobin, hematocrit and erythrocytes fall below the normal range[1]. The World Health Organization (WHO) defines anemia as hemoglobin concentrations below 12 g/dL in women and 13 g/dL in men[2]. The prevalence of anemia increases during growth and development when there is an increased need for an iron-rich diet.[3,4] Anemia after the delivery of a child (postpartum anemia) is a common problem throughout the world [5]. The prevalence of postpartum anemia is highest in developing countries.[5] where it is a major cause of maternal morbidity and mortality[6]. It has been estimated that of the~500,000 maternal deaths occurring each year on a global scale in association with delivery, 20% are caused by Prepartum hemorrhage and anemia[7]. However, postpartum anemia also constitutes a significant and partly unrecognized problem even in developed countries[8]. Postpartum anemia is closely connected with the presence of anemia in pregnancy before delivery (Prepartum anemia)[1], which inevitably will be aggravated after delivery due to the obligatory and sometimes unforeseen blood losses[8]. In the Western countries, the prevalence of Prepartum anemia in the third trimester is markedly lower in women who have taken iron supplements during pregnancy compared with non-supplemented women [9]. The major causes of postpartum anemia are Prepartum iron deficiency/anemia in combination with excessive blood losses at delivery[7]. Normal Prepartum blood losses are approximately 250–300 ml, but Prepartum hemorrhage of >500 ml occurs in 5%–6% of the women [1,8]. Most mothers recover from postpartum anemia during the weeks or sometimes months after delivery. But when recovery takes a long time, e.g. with an unfavorable baseline Hb around delivery, functional consequences of iron deficiency and anemia may appear or worsen: depressive symptoms, deficits in cognitive function, fatigue, lower work performance, impaired immune function[10]. Also, poorer functioning of mother-child interaction and even delayed infant development were related to maternal postpartum iron deficiency anemia[11].The main objective of our study is to assess the incidence of postpartum anemia (PPA) among postpartum patients who were delivered at EJH and associated risk factors.

PATIENTS AND METHODS

This study is retrospective cohort study for patients delivered at EJH from first of January 2018 to 30 of June 2018. Important antenatal, intrapartum and postpartum variable were collected and analyzed. This selected number was chosen based on the best findings completed data. Statistical analyses were performed using the Statistical Package for the Social Science (SPSS), Version 16 for Windows. This is a retrospective cohort hospital-based study that was conducted at east Jeddah hospital (EJH). East Jeddah Hospital is a 300-bed public hospital located in the city of Jeddah, Western Saudi Arabia. The hospital provides medical, surgical and rehabilitation services to its visitors as one of the hospitals in Jeddah governorate under the umbrella of the Ministry of Health. These services are provided by a distinguished team of medical staff using the latest medical equipment and technologies. In this study, the results of the routine prenatal hemoglobin screening tests of women attending the first prenatal clinic over six months period between 1 January 2018 and 31 June 2018 were reviewed. Patient's demographic data including age, nationality, Parity, Current multiple pregnancies, Method of delivery and complications were reviewed and analyzed. Findings completed data. Our definition of postpartum anemia is patients who having Hb < 10 g/dl. It was selected according to the statistical equation of significance and was collected from the patient files of East Jeddah Hospital (EJH).

STATISTICAL ANALYSIS

Statistical analyses were performed using the Statistical Package for the Social Science (SPSS), Version 16 of Windows. Continuous variables were summarized using descriptive statistics regarding Mean ± Standard deviation. A chi-square test was used to compare categorical variables. A P-value less than 0.05 was considered significant.

SAMPLE SIZE

The total number of cases is 1252, who had complete data and others were excluded. However, during the analysis, we just analyzed 250 cases. This selected number was chosen based on the best.

RESULTS

A total of 250 cases included in the statistical analysis. Multiple demographic clinical data were collected and analyzed. Most cases (88.2%) were Saudi. P value < 0.05 is the incidence of postpartum hemorrhage in our study was 59.4%. The statistical significant correlation between the incidence of postpartum anemia and patient status, current multiple pregnancy, preterm gestational age, post-term gestational age, cesarean delivery, instrumental delivery, tear, 1st degree tear, antenatal anemia and blood transfusion. (P Values 0.05). A total of 250 cases included in the statistical analysis. P value < 0.05 is the cut of value of significance. Multiple demographic clinical data were collected and analyzed. Most of the cases (88.2%) were Saudi. Regarding parity, most of them (67.1%) were multiparous. About half (50.8%) of them were booked at the hospital. Approximately all of them (92.7%) were aged from twenty to forty years. About all of our cases (98.4%) weren't current multiple pregnancy cases. More than two thirds of the cases (77.6%) were term pregnancy (37-41 weeks). Approximately all of them (93.1%) were spontaneous labor. 70.3% hadn't previous cesarean delivery. More than half of them (54.5%) were spontaneous vaginal delivery. 28.9% of the complications were perineal tears, 26.8% were episiotomy, and 6.1% were with other complications. 1.2% had APH, and 7.7% developed PPH. Antenatal hemoglobin concentration was ranged from 7 to 14.7% with Mean± SD of 11.1 ± 1.3 where half of our sample (50%) were Antenatal anemia. Postpartum hemoglobin concentration was ranged from 7.2 to 15.3% with Mean± SD of 10.7 ± 1.5 where more than half of them (59.3%) were postpartum anemic. Regarding associated diseases, about 24% of total samples were having chronic diseases with pregnancy, out of which 5% of them were hypertensive, 2% were diabetic. Only 3% of cases required blood transfusion (Table 1).

Table 1
Descriptive statistics

	Description (n=250)
Nationality	
Saudi	219 (88.2%)
Non-Saudi	31 (11.8%)
Parity	
Primiparous	83 (32.9%)
Multiparous	167(67.1%)
Patient status	
Booked	127 (50.8%)
Non-booked	123 (49.2%)
Maternal age	
< 20 years	4 (1.2%)
20-40 years	230 (92.7%)
> 40 years	16 (6.1%)
Current multiple pregnancies	
Yes	5 (1.6%)
No	245 (98.4%)
Gestational age	
Preterm (<37 W)	41 (16.3%)
Term (37-41 W)	193 (77.6%)
Post-term (>41 W)	16 (6.1%)
Induction of labor	
Yes	18 (6.9%)
No	232 (93.1%)
Previous CS	
Yes	75 (29.7%)
No	175 (70.3%)
Method of delivery	
SVD	136 (54.5%)
CS	94 (37.8%)

Instrumental Delivery	20 (7.7%)
Complications type	
Episiotomy	67 (26.8%)
1st-degree tear	61 (24.4%)
2nd-degree tear	12 (4.5%)
Other complications	15 (6.1%)
No complications	95 (38.2%)
Blood loss	
APH	4(1.2%)
PPH	20 (7.7%)
No blood loss	226 (91.1%)
Antenatal HB%	
Range	7 - 14.7
Mean ± SD	11.1 ± 1.3
Antenatal anemia	
Yes	125 (50%)
No	125 (50%)
Postpartum HB%	
Range	7.2 - 15.3
Mean ± SD	10.7 ± 1.5
Postpartum anemia	
Yes	149 (59.3%)
No	101 (40.7%)
Chronic disease	
DM	5 (2%)
HTN	13 (4.9%)
Others	42 (16.7%)
No chronic diseases	190 (76.4%)
Blood transfusion	
Yes	9 (3.3%)
No	241 (96.7%)

Number in brackets are % of total

We found statistical significant correlation between the incidence of postpartum anemia and patient risk factors like: current multiple pregnancy, preterm labor, post-term pregnancy, cesarean delivery, instrumental delivery, 1st degree tear, 2nd degree tear, antenatal anemia. (Please see Tables 1&2). In addition, postpartum anemia (PPA) is higher among cases delivered by CS compared to cases delivered through the vaginal route.

Table 2

Relations of Postpartum anemia

	Postpartum anemia (n=149)	**No Postpartum anemia (n=101)**	**P value***
Nationality			
Saudi	133 (90.4)	86 (85)	0.196
Non-Saudi	15(9.6)	16 (15)	
Parity			
Primiparous	55 (37.7)	26 (26)	0.056
Multiparous	91 (62.3)	74 (74)	
Patient status			
Booked	91 (61.6)	36 (35)	**<0.001**
Non-booked	57 (38.4)	66 (65)	
Maternal age			
< 20 years	4 (2.1)	0 (0)	0.273

20-40 years	133 (90.4)	97 (96)	0.098
> 40 years	112 (7.5)	4 (4)	0.255
Current multiple pregnancy			
Yes	0 (0)	5 (4)	**0.026**
No	149 (100)	96 (96)	
Gestational age			
Preterm (<37 W)	35 (23.3)	6 (6)	**<0.001**
Term (37-41 W)	112 (76)	81 (80)	0.463
Post-term (>41 W)	1 (0.7)	15 (14)	**<0.001**
Induction of labor			
Yes	10 (6.2)	8 (8)	0.577
No	139 (93.8)	91 (92)	
Previous CS			
Yes	49 (33.6)	24 (24)	0.107
No	97 (66.4)	76 (76)	
Method of delivery			
SVD	74 (50)	62(61)	0.089
CS	68 (45.9)	26 (26)	**0.002**
Instrumental Delivery	7 (4.1)	13 (13)	**0.010**
Complications type			
Episiotomy	34 (22.6)	33 (33)	0.071
1st-degree tear	30 (19.9)	31 (31)	**0.046**
2nd-degree tear	5 (2.7)	7 (7)	0.127
Other complications	10 (6.8)	6 (5)	0.552
Blood loss			
APH	4 (2.1)	0 (0)	0.273
PPH	16 (10.3)	4 (4)	0.070
Antenatal anemia			
Yes	116 (78.1)	9 (9)	**<0.001**
No	33 (21.9)	92 (91)	
Chronic disease			
DM	3 (2.1)	2 (2)	0.976
HTN	7 (4.1)	6 (6)	0.555
Others	31 (20.5)	11 (11)	0.056
No chronic diseases	108 (73.3)	82 (81)	0.162
Blood transfusion			
Yes	9 (5.5)	0 (0)	**0.023**
No	140 (94.5)	101 (100)	

Chi-square test, values are mean +/- SD:(n=250), P<0.05 when compared with control

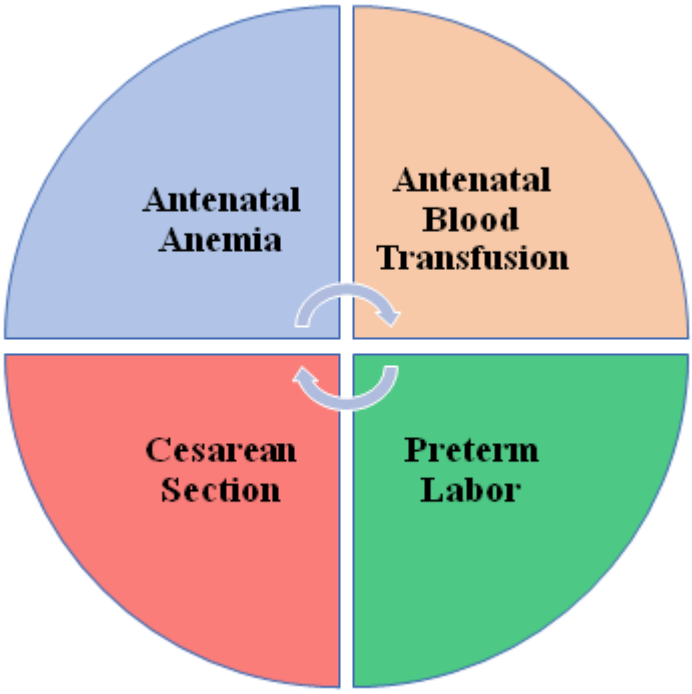

Figure 1
Shows Significant Risk Factors of PPA

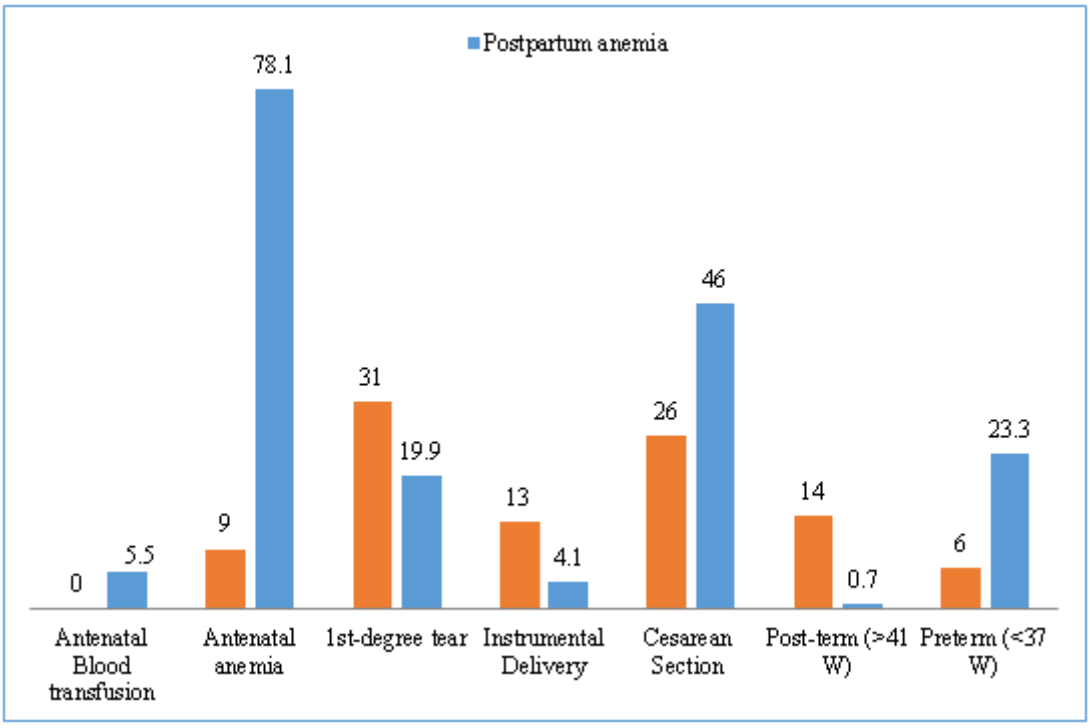

Figure 2
Risk Factors linked to PPA

DISCUSSION

The objective of our study was to assess the incidence of postpartum anemia and the risk factors related to its appearance. Among our cases, the incidence of postpartum anemia was 59.3%. Preterm gestational age, cesarean delivery, antenatal anemia were significant independent risk factors for postpartum anemia. It was found that postpartum anemia (PPA) was higher among those delivered through CS and low among those delivered through vaginal route. Our study found the incidence of postpartum anemia at the east Jeddah hospital (EJH) was at 59.3%. This is high in comparison with international figure (22 – 45 %). [8-17] Not much work has been done to find out the incidence of postpartum anemia in Jeddah even in the previous National Demographic Health Surveys. Our figures are comparable other studies in developing countries[12-14]with a range of 50-80%.

This might be due to differences in the methodology of analysis followed (retrospective cohort method). These findings shed the light on the urgent need to keep PPA monitor to adjust current strategies to control risk factors associated with PPA. Further patient health education is required to improve their awareness for a better nutrient with iron rich diet and better compliance with iron medications. Increasing parity was found to be significantly associated with postpartum anemia in our study. Parity had a clear effect on the incidence of anemia. The women with more than two pregnancies had a significantly higher rate of anemia. Similar outcome was found in our Literature reviews. [14-16] This might be due to the increase in women's nutritional needs during pregnancy. It shows the importance of contraception awareness among women. Among the identified factors, parity appears an important factor for developing postpartum anemia. However, our results disagreed Rubio-Álvarez and Brichs [17-18] who reported that both cut-off points displayed a higher incidence of anemia in Primiparous women. In our study, there was a significant correlation between postpartum anemia and blood transfusion. These results may be explained as, women with obstetric problems, for example, multiple pregnancies, placenta Previa, uterine bleeding in late pregnancy, and anemia in pregnancy, have a higher prevalence of early postpartum anemia[8]. However, the blood losses at delivery, especially in cesarean deliveries, are by far the most important risk factor for postpartum anemia[8] . Cesarean deliveries may be associated with blood losses of ~1,000 ml. [8,19-20] Our study showed that blood transfusion under strict condition. It indicates improvement of practitioner attitude and strict follow up of blood transfusion protocols.[21] It was noticed that patients with 1st degree perineal tears have higher incidence of PPA. It's advisable to review current protocols in managing such cases. It may indicate continuous blood flow contributes to PPA.

CONCLUSION

Among our cases, the incidence of postpartum anemia was 59.3%. Preterm gestational age, cesarean delivery, antenatal anemia and blood transfusion were significant risk factors for postpartum anemia where postpartum anemia (PPA) was higher among those delivered through CS and low among those delivered through SVD and instrumental deliveries, so PPA was less associated with postpartum complications as all of these complications due to vaginal deliveries and all cases who needed blood transfusion were diagnosed with postpartum anemia.

AUTHORS CONTRIBUTION STATEMENT

Dr Rehab supervised the whole work. Dr Nadia participated in providing and giving access to data. Ghadeer developed analysis & computation service. Nada, Sumyah, Bayader designed questionnaire, collected & verified data. Dr Rehab & Ghadeer prepared results interpretation & discussion. Ghadeer, Nada, Sumyah, Bayader did literature review.

CONFLICT OF INTEREST

Conflict of interest declared none.

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