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A Case Report on Fetal Distress due to Anaemia during Pregnancy

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Abstract: ***Anemia (IDA) during pregnancy is a common and preventable disorder. It remains a contributing factor to maternal morbidity and mortality and is associated with high perinatal mortality rates.Anaemia is associated with poor cognitive and motor development in children, and work capacity in adults, influencing country economicdevelopment.Among pregnant women, iron deficiency anaemia is also associated with adverse reproductive outcomes such as preterm delivery, low-birth-weight infants, and decreased iron stores for the baby, which may lead to impaired development.Failure to reduce anaemia may result in millions of women experiencing impaired health and quality of life, and may impair children'sdevelopment and learning. Anaemia is an indicator of both poor nutrition and poor health. A number of recent studies have contributed to the understanding of anemia physiology, leading to alternate treatment options; however, much work remains to raise awareness and improve the high morbidity and mortality of these complex conditions.***

Keywords: Fetal Well-Being, Cardiotocograph,fetal distress, Iron-deficiency anaemia; pregnancy

1. Introduction

Anaemia is a condition in which the number of red blood cells or the haemoglobin concentration within them is lower than normal. Haemoglobin is needed to carry oxygen and if you have too few or abnormal red blood cells, or not enough haemoglobin, there will be a decreased capacity of the blood to carry oxygen to the body's tissues. This results in symptoms such as fatigue, weakness, dizziness and shortness of breath, among others. The optimal haemoglobin concentration needed to meet physiologic needs varies by age, sex, elevation of residence, smoking habits and pregnancy status. The most common causes of anaemia include nutritional deficiencies, particularly iron deficiency, though deficiencies in folate, vitamins B12 and A are also important causes; haemoglobinopathies; and infectious diseases, such as malaria, tuberculosis, HIV and parasitic infections. Anaemia is a serious global public health problem that particularly affects young children and pregnant women. WHO estimates that 42% of children less than 5 years of age and 40% of pregnant women worldwide are anaemic.

Anaemia can cause a range of symptoms including fatigue, weakness, dizziness and drowsiness. Children and pregnant women are especially vulnerable, with an increased risk of maternal and child mortality. The prevalence of anaemia remains high globally, particularly in low-income settings, where a significant proportion of young children and women of childbearing age can be assumed to be anaemic. Iron deficiency anaemia has also been shown to affect cognitive and physical development in children and reduce productivity in adults.Anaemia is an indicator of both poor nutrition and poor health. It is problematic on its own, but it can also impact other global nutritional concerns such as stunting and wasting, low birth weight and childhood overweight and obesity due to lack of energy to exercise. School performance in children and reduced work productivity in adults due to anaemia can have further social and economic impacts for the individual and family.[1]

Anaemia is highly prevalent globally, disproportionately affecting children and women of reproductive age. Among pregnant women, iron deficiency anaemia is also associated with adverse reproductive outcomes such as preterm delivery, low-birth-weight infants, and decreased iron stores for the baby, which may lead to impaired development. Iron deficiency is considered the most common cause of anaemia but there are other nutritional and non-nutritional causes. Blood haemoglobin concentration is used to diagnose anaemia and it is affected by many factors, including altitude, smoking, trimester of pregnancy, age and sex.The prevalence of anaemia in a population can be used to classify the public health significance of the problem.Percentage of women aged 15−49 years with a haemoglobin concentration less than 120 g/L for non-pregnant women and lactating women, and less than 110 g/L for pregnant women, adjusted for altitude and smoking.Theanaemia status of women is assessed using blood haemoglobin concentrations. Blood haemoglobin concentrations are typically measured in surveys using the direct cyanmethemoglobin method in a laboratory or with a portable, battery-operated, haemoglobin photometer (using the azide-methaemoglobin method) in the field.Data on the prevalence of anaemia and/or mean haemoglobin in women of reproductive age, collected between 1995 and 2019 were obtained from 408 population-representative data sources from 124 countries worldwide.Anemia is one of the most frequentcomplications related to pregnancy. Normal physiologic changes in pregnancy affect the hemoglobin (Hb),and there is a relative or absolute reduction in Hb concentration. The mostcommon true anemias during pregnancy are iron deficiency anemia (approximately 75%) and folate deficiency megaloblastic anemia, which are more common in women who have inadequate diets and who are not receiving prenataliron and folate supplements. Severe anemia may have adverse effects

on themother and the fetus. Anemia with hemoglobin levels less than 6 gr/dl is associated with poor pregnancy outcome. Prematurity, spontaneous abortions, lowbirth weight, and fetal deaths are complications of severe maternal anemia.Nevertheless, a mild to moderate iron deficiency does not appear to cause a significant effect on fetal hemoglobin concentration. An Hb level of 11 gr/dl in thelate first trimester and also of 10 gr/dl in the second and third trimesters aresuggested as lower limits for Hb concentration. In an iron-deficient state, ironsupplementation must be given and follow-up is indicated to diagnose iron-unresponsive anemias. [2]

Anaemia has been reported to be associated with adversepregnancy outcomes,especially when presenting in the last trimester. In addition to prevalent common causes of anaemiainpregnant women, poor replenishment of iron stores after a pregnancy event is specific to women with higher birth orders. Anaemic women presenting in the third trimester are more prone to maternal complications such as infections, toxaemia, antepartum haemorrhage,cardiac failure, pre-eclampsia as well as fetalhazards too such as low birth weight, pre-term deliveries, developmental anomalies, and even neonatal death. When presented near termthere are higher chances of feto-maternal morbidity and mortality. In thecurrent study, analysis is done of feto-maternal outcomes, routes of delivery of women, causes of anaemia in multigravida women in the third trimester suffering from moderate to severe anaemia in a tertiary care centre of Western Rajasthan of India.A prospective observational clinical study was conducted on patients attending GeetanjaliHospital over a period of 18 months. A total of 70 consecutive multigravida pregnant women havingmoderate to severe anaemia in the third trimester were selected. Statistical analysis of the data collectedwas done and a p-value <0.05 was taken as significant.Moderate and severe anaemia in the study population were 44.28% and 55.71%, respectively. Themean haemoglobin level of all study groups was 7.0 gm%. Preeclampsia, placenta praevia, (PPH), congestive cardiac failure (CHF),neonatal intensive care unit (NICU) admission,preterm birth (PTB), low birth weight (LBW), intrauterine death (IUD), low Appearance, Pulse, Grimace,Activity, and Respiration(APGAR) score, and birth asphyxia records were investigated. Of the patientsstudied, 18.57% had PPH, 15.71% had pre-eclampsia, 8.57% had IUD, and 37.14% newborns were LBW.Multiparity itself is a major risk factor of anemia. Anemia presenting in thethird trimester ofpregnancy is a proxy indicator of care received by gravid women in the early antenatalperiod. In combination, a multigravida in the third trimester with less time to restock iron and vitaminstoresmay result in considerable maternal as well as perinatal mortality & morbidity.[3]

An observation of antenatal anaemia which showed as fetal distress found by a decrease of fetal movements and confirmed by cardio-tocography. At birth, the baby was very pale and has a severe anaemia. The authors have investigated methodintroduced by Sadovsky for analysing fetal activity in which the woman counted her fetal movements in accordance with a time schedule. Normal fetal movements are an indication of fetal well-being. Decreased fetal movements may be an indication of chronic fetal asphyxia. In this case, cardiotocography has to be undertaken. Analysis of their results demonstrated the value of this method which appears to be useful particularly for the assessment of chronic fetal distress.[4]

The authors have investigated the method introduced by Sadovsky for analysing fetal activity in which the woman counted her fetal movements in accordance with a time schedule. The counts were performed for three periods of 30 minutes, each day, at 9 a.m.,5 p.m. and 9 p.m. Thirty minutes was the time chosen for each period because, after this time, most patients became tired and subsequent recordings became unreliable. After careful instruction, the patient was provided with a digital counter. The total number of movements counted was recorded on a special data form. This method was found to be useful for the assessment of chronic fetal distress in disturbances of the feto-placental unit, particularly in hypertension. Normal fetal movements in high-risk pregnancies are an indication of fetal well-being. Decreased fetal movements may be an indication of chronic fetal asphyxia. In this case, cardiotocography has to be undertaken. We intend to make a prospective study to elucidate the normal pattern of fetal activity throughout pregnancy, factors which affectfetal movements prognostic significance of their variations.[5]

Maternal oxygen administration has been used in an attempt to lessen fetal distress by increasing the available oxygen from the mother.This has been used for suspected fetal distress during labour, and prophylactically during the second stage of labour on the assumption that the second stage is a time of high risk for fetal distress.The objective of this review was to assess the eIects of maternal oxygenation for fetal distress duing labour and to assess the eIects of prophylactic oxygen therapy during the second stage of labour on perinatal outcome.We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (22 October 2012) and searched reference lists of retrieved studies.Randomized trials comparing maternal oxygen administration for fetal distress during labour and prophylactic oxygen administration during the second stage of labour with a control group (dummy or no oxygen therapy). Both review authors assessed eligibility and trial quality. Data were extracted, checked and entered into Review Manager soLware. Fordichotomous data, we calculated relative risks (RR) and 95% confidence intervals (CI). For continuous data, we calculated weighted meandiIerences and 95% CI.We located no trials addressing maternal oxygen therapy for fetal distress. We included two trials which addressed prophylactic oxygenadministration during labour. Abnormal cord blood pH values (less than 7.2) were recorded significantly more frequently in the oxygenation group than the control group (RR 3.51, 95% CI 1.34 to 9.19). There were no other statistically significant diIerences between the groups.There were conflicting conclusions on the eIect of the duration of oxygen administration on umbilical artery pH valuesbetween the two trials.[6]

2. Case Presentation

On april the 24th, 2022, a 21-year-old women,monika (G_2PLA_1S) gravida 2 para 0, at 39-week gestation, was

admitted to our Departmentof Obstetric with decreased variability in fetal heartrate monitoring associated with oligohydramnios. The ultrasoundscan performed at admission showed a vertex presentingfetus with an estimated weigth of 4000 g, reduced amnioticfluid index (AFI 7.3).Her previous obstetrical and medical history was one abortion, and her current pregnancy was ordinary.Within 40 minutes of admission, an induction of laborwith Oxytocin 5UI was performed under cardiotocographymonitoring. Two hours after the induction, we still observeda reduced variability in fetal heart rate from cardiotocography (amplitude range of 5 beats/minute) with sporadic latedecelerations, then we proceeded to amniorrhexis which revealed meconium-stained amnioticfluid. Therefore, a cesareanand her current pregnancy was ordinary.Within 40 minutes of admission, an induction of laborwith Oxytocin 5UI was performed under cardiotocography monitoring. Two hours after the induction, we still observeda reduced variability in fetal heart rate from cardiotocography (amplitude range of 5 beats/minute) Therefore, a cesarean section was performed for acute fetal distress, since spontaneous vaginal delivery was notimminent. Anasphyxiated, 4335 g male newborn was delivered, with Apgar score 2 and 8 at 1 and 5 minutes, respectively. The newborn had cardiac activity, but shebreathed after ventilation. The examination of the placenta and the umbilical cord done. The newborn did not show other disorders due toanaemia. Both mother and neonate were discharged from hospital after 5 days without complications.The neonate was followed up & remained in good health after delivery.

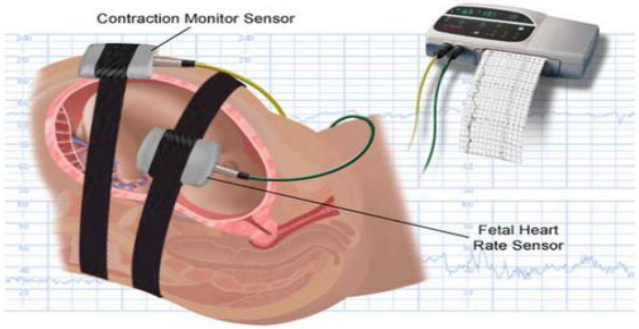

Figure 1: Monitoring of FHR byexternal cardiotocographic (CTG)

In physical examination found to be all body pale,and parameter summarized in table no.1.

Parameter	Observedvalue
RespirationRate	18/min
Temperature	98.2f
Pulse- rate	88/min
BP	128/60
CVS	S_1S_2+
CNS	Welloriented
Cyanosis	+
Pallor	+
Clubbing	-

patient was diagnosed with anemia.The laboratorial value summarized in table no.2

At the of hospital Table no. 2

According to lab value; she had anaemia Patient treated with initial treatment (folate (500 µg) iron (120 mg) taken twice a day) monitored vitals and laboratorial value regularly

Parameter	Observedvzalue
INR	1.06
Hb TLC	9.9 9700
PCV	27.6
DLC NLME	79/18 /2/01
Platelets	1,92000
S.Urea Creatinine	14/0.7
S.Bil/OT/PT	0.6/357/640
Albumin globulin	2.8/2.7
UrineR/M	Negative

Physiology of anaemia

Anemia is one of the most frequent complications related to pregnancy. The word implies a decrease in the oxygen-carrying capacity of the blood and is best characterized by a reduction in hemoglobin concentration. This may be either relative or absolute. It is known that there is a larger increase in plasma volume relative to red cell mass in almost all pregnancies, and it accounts for "physiologic anemia." These alterations have been known for centuries, and the term "plethora gravidarum" from medieval ages indicates this condition. However, it is still an open question to what extent this "hydremia" is physiologic or pathologic. There are two contrasting medical philosophies covering this problem. According to the first, it is preferable to prevent pregnant women from developing too low hemoglobin concentrations. According to another point of view the "physiologic anemia" is of great importance for normal fetal growth and should be passively observed. Moreover, the relationship between a successful outcome of pregnancy and this normal expansion in maternal plasma volume has been noted.

Diagnostic Criteria

Anaemia is defined by the WHO as haemoglobin level ≤ 11 g/dl in pregnant women.Anaemia is divideinto 3 categories according to haemoglobin level:

Non-pregnant women of reproductive age 15-49 years	Pregnant women	
Non-anemic	≥12 g/dL	Non-anemic
Mild anemia	10-11.9 g/dL	Mild anemia
Moderate anemia	7-9.9 g/dL	Moderate anemia
Severe anemia	<7 g/dL	Severe anemia

Treatment

WHO oversees several programmes across all WHO Regions to help reduce the prevalence of anaemia through treatment and prevention. These guidelines, policies and interventions aim to increase dietary diversity, improve infant feeding practices and improve the bioavailability and intake of micronutrients through fortification or supplementation with iron, folic acid and other vitamins and mineral. Social and behaviour change communication strategies are used to change nutrition-related behaviours. Interventions to address the underlying and basic causes of anaemia look at issues such as disease control, water, sanitation and hygiene, reproductive health and root causes such as poverty, lack of education and gender norms.

a) Oral iron therapy

(i) Iron tablets

Iron tablets contain a percentage of elemental iron that varies with the molecular weight of the iron compounds. Uncoated tablets and sugar-coated tablets are the least expensive formulations and disintegrate well in the stomach. (WHO, 1989)

(ii) Combinations with other nutrients

During pregnancy, women tend to become deficient in both iron and folate. It is therefore desirable to combine both haematinics in one tablet. The addition of folate (250 µg) to ferrous sulphate (60 mg of iron) increases the tablet's cost by an insignificant amount if at all (WHO, 1989).

iii) Dosage

daily administration of folate (500 µg) with iron (120 mg) is combination tablet, to be taken twice a day, would contain 250 µg of folate and 60mg of iron (WHO, 1989).

b) Parenteral iron therapy

The parenteral route is indicated only when oral administration causes severe vomiting that cannot be stopped by lowering the dose of iron,. The most commonly used preparation for intramuscular or intravenous administration is Imferon R (iron dextran). The advantage of the intravenous method is that the complete iron requirement can be supplied in a single dose. The recommended intravenous dose for adults (including pregnant women) is 500 mg of iron in 10 ml of saline solution given over a period of 10 minutes following a test dose of 1-2 drops.. The recommended intramuscular dose is 100 mg of iron in 2 ml of saline solution..

Prevention of iron deficiency anemia

The basic approaches to the prevention of iron deficiency anemia are discussed below:

1) Dietary modification

Dietary modification activities require not only information on real food availability by groups at risk but also on dietary patterns, the bioavailability of iron in local diets and cultural aspects and local preferences. Information, education and communication at all levels play key roles in promoting a healthy diet (WHO, 2001).

a) Local dietary factors

Appropriate dietary modifications activities should seek to: increase intake of vitamin C – rich foods and others foods that promote iron absorption increase, where possible, intakes of locally available haem-iron food products(WHO, 2001).

b) Behavioural aspects

Modifying dietary patterns that are usually culturally ingrained . Beliefs, preferences, restrictions, taboos, and cultural issues governing food consumption should be understood and appreciated.(WHO, 2001).

2) Fortification Iron supplementation

Iron fortification can be an effective way of preventing iron deficiency, The average woman of reproductive age needs about 350-500 mg additional iron to maintain iron balance during pregnancy. All pregnant women should be given 60 mg iron and 400 µg folic acid daily folic acid should always be given with iron during pregnancy.which is expected to reduce risk of neural tube defects (WHO, 2001).

The WOMEN was treated with

1) 5unitIVoxytocin (5 unit given) was administered.
2) Trenexa 500mg
3) Inj. Rantac 50 mg TDS
4) Fortwin 30 mg TDS
5) Phenargan 25mg TDS
6) PCM 50 gm SOS
7) Avil and laxis
8) IV AntibioticsAzithromycinMetrinidazole

Supportive Care

- Gastroprotection medication-ranitidine
- Prophylactic cotrimaxazole,amoxicilin
- Nutritional supplement- Vitamins,Calories, IV Fluid

3. Outcome

Few cases of anaemia in women reported in the literature. Women hospitalized and treatment may be started on suspicion to avoid loss of timeThe physicians should be aware of the risk and symptoms of anaemia, whichmay present the baby boywas aswomen and neoborn, with no complication. After d 5 daysof hospitalization, mother is healthy and baby survived this healthy condition.

4. Conclusion

Anemia in particular were significantly associated with higher gravidity and parity. The significant outcome associated with IDA during pregnancy was a lower rate of spontaneous vaginal delivery and antenatal fetal distress. prevention in multiparous antenatal women can be made possible by early diagnosis and treatment of anaemia. Efforts must be made to diagnose and treat anaemia in the third trimester to decrease length of hospital stay and reduce maternal and neonatal morbidity and mortality. Strategies such as food fortification, mandatory iron, and folic acid supplementation, deworming, and diligent applications of national health programmes should be done.Counseling women, spouses, families, and society on the causes and outcomes of anaemia during pregnancy and after childbirth may help the cause in the long run and enhance public health.

Consent

Written informed consent was obtained for publication of this case report.

Acknowledgement

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References

[1] World health organization https://www.who.int/health-topics/anaemia#tab=tab_1
[2] https://www.who.int/data/gho/data/indicators/indicator-details/GHO/prevalence-of-anaemia-in-women-of-reproductive-age-(-)
[3] KrutiSavaliya , Nalini Sharma , RushikeshSurani , VimlaDhakar , Arun GuptaMultigravida Women With Moderate to SevereAnaemia in Third Trimester: FetomaternalOutcomes
[4] r henrion, i heard A fetal distress signal: decreased fetal movements. A case of antenatal anaemiapmid: **548554**
[5] Kumar B. Shill,[1] Palash Karmakar, [1] Md. G. Kibria,[1] Abhijit Das,[1] Mohammad A. Rahman,[1] Mohammad S. Hossain,[1] and Mohammad M. Sattar[2] Prevalence of Iron-deficiency Anaemia among University Students in Noakhali Region, BangladeshJ Health PopulNutr. 2014 Mar; 32(1): 103–110.PMCID: PMC4089078PMID: 24847599
[6] Bukola Fawole[1], G Justus Hofmeyr Maternal oxygen administration for fetal distressPMID: 23235574PMCID: PMC7045413DOI: 10.1002/14651858.CD000136.pub2
[7] https://www.who.int/health-topics/anaemia#tab=tab_3