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Case Study of HELLP Syndrome in a pregnant woman of African Descent in Jos, North Central Nigeria.

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Abstract
HELLP (haemolysis, elevated liver enzymes, low platelets) is a pregnancy- associated hypertensive syndrome that constitutes one of the clinical forms in the range of pre-eclampsia. It is a severe complication seen in pregnant women usually in the second trimester of pregnancy. We describe a 31-year-old primigravidae with twins who presented at 16/40 with history of epigastric pain raised BP 240/140mmHg with signs of HELLP [signs of haemolysis (raised bilirubin (direct and indirect of 17.8 and 4.8 µmol/L respectively), elevated liver enzymes (AST and ALT of 47 and 48 iu/L) and low platelet count ($81x10^9$/L)]. The patient situation worsened significantly and a decision was taken by the managing team after obtaining consent from the patient and her partner to terminate the pregnancy to save the mother's life. With effective management and excellent supportive care, all laboratory derangements, including liver enzymes normalised after 2 weeks.

Keywords: Case Study, HELLP Syndrome, Jos, North Central Nigeria

Background

The incidence of HELLP syndrome is approximately 0.6% of all pregnancies and is considered a variant of severe preeclampsia (Hammoud and Ibdah, 2014). Ten percent to 20% of patients with severe preeclampsia will develop HELLP. Hypertensive disorders in pregnancy represent a large spectrum of disorders where the HELLP syndrome is on the severe end. HELLP is used to describe a triad of haemolysis with a microangiopathic blood smear, elevated Liver enzymes and low Platelet count [1]. In this case report, we present an unexpected case of HELLP syndrome. There is need to optimise the knowledge base of clinicians and obstetricians to facilitate the prompt diagnosis and effective management of a case presentation of HELLP syndrome to reduce the incidence of associated perinatal and maternal morbidity and mortality.

Case Presentation

A 31-year-old primigravidae with twins who presented at 16/40 to Tru-Care Medical Consult and Solutions Ltd. in Jos (North Central Nigeria) with right upper quadrant abdominal pain, oedema, raised BP 240/140mmHg with signs of HELLP [signs of haemolysis (raised bilirubin (direct and indirect) of 17.8 and 4.8 µmol/L and raised LDH 368 iu/L), elevated liver enzymes; AST and ALT (47 and 48 iu/L) respectively and low platelet count ($81x10^9$/L)]. Urinalysis result indicated a positive result for protein and ketones. Serology report indicated a non-reactive result for HBsAg, HCV, HIV and VDRL. Written informed consent was obtained from the subject after counselling. The subject's full blood count results, biochemical profile urinalysis and serological testing result is shown in table 1,2, 3 and 4 respectively.

Figure 1: Full blood count results on Subject

Haematological Parameter/Unit	Result	Reference Range
Total White Cell Count ($x10^9$/L)	7.1	4-10
RBC Count ($x10^{12}$/L)	3.82	3.5-5.2
Haemoglobin (g/L)	116	120-160
Haematocrit (%)	34%	36-54
MCV (Fl)	89.9	80-100
MCH (pg)	30.3	27-34
MCHC (g/dl)	337	310-370
RDW-CV (%)	14.6	11-16
RDW-SD (%)	43.8	35-56
Platelet Count ($x10^9$/L)	81	140-400)
MPV (Fl)	10.8	6.5-12
PDW (Fl)	16.4	15-17
P-LCR	33.9	11-48

Table 1: Biochemical Parameters on Subject

Haematological Parameter/Unit	Result	Reference Range
Potassium (mmol/L)	4.0	3.5-5.5
Sodium (mmol/L)	148	135-145
Chloride (mmol/L)	91	98-106
Bicarbonate (mmol/L)	22	24-32
Urea (mmol/L)	3.9	2.5-8.0
Creatinine (mmol/L)	88.5	72-126
Uric Acid (mmol/L)	155.8	220-410
Total Protein (g/L)	71	60-82
Albumin (g/L)	45	35-52
Alkaline Phosphatase (iu/L)	14.9	21-110
ALT (iu/L)	48	5-40
AST (iu/L)	47	5-35
Total Bilirubin (umol/L)	17.8	<17
Direct Bilirubin (umol/L)	4.8	<4.3
LDH (iu/L)	368	120-240
CRP (mg/dl)	8.42	<6.0
Fibrinogen (mg/dl)	479.3	200-400

Table 2: Urinalysis Result of Subject

Parameter	Result
Leucocytes	Negative
Nitrite	Positive
Urobilinogen	Negative
Protein	++
Blood	Negative
Ketones	Negative
Bilirubin	Negative
Glucose	Negative
Ascorbic Acid	0.1
pH	5.0
Specific Gravity	1.015
Appearance	Amber and slightly turbid

Table 3: Serological Results on Subject

Parameter	Result
HBsAg	Non-Reactive
HCV	Non-Reactive
HIV 1&2	Non-Reactive
VDRL	Non-Reactive
Blood Group	O Rh D Positive

Discussion

Our case patient presented with low platelet count. The low platelets seen with this syndrome can play a contributory role in obstetric complications particularly for women that require surgical interventions (Vázquez Rodríguez *et al.,* 2011). Previous report recommends that pregnant women (30-35 years old, overweight, with previous history of hypertension and nulliparous woman) with pregnancy, related hypertension should be effectively managed by qualified obstetricians to prevent associated complications (Ramadan *et al*., *1993).*

In this case, the patient presented with hypertension, proteinuria and was oedematous. Previous report indicates that in the post-partum period the HELLP syndrome usually develops within the first 48 hours in women who have had proteinuria and hypertension prior to delivery [4]. In patients with a severe case of HELLP, sometimes a difficult decision may need to be made like in this case study to end the pregnancy to save the mother's life (Gardeil *et al*., 2001). HELLP usually occurs during the antepartum period typically between 27- and 37-weeks' gestation. Previous report indicates that HELLP is a significant diagnostic and therapeutic challenge particularly because 15-20% of affected patients may not typically present with hypertension and proteinuria. Evidenced- based best practice to effectively manage, potentially arrest disease progression, reduce disease associated adverse outcomes and mortality in HELLP requires a combination of interventions (intravenous dexamethasone; intravenous magnesium sulfate, control of blood pressure, replacement of blood products as clinically indicated, timely delivery of the foetus and placenta (Townsend et al., 2016).

We observed that our case patient presented with elevated liver enzymes (AST and ALT). Our finding is consistent with previous report which indicated that elevated liver enzymes are critical finding in classical cases of HELLP (Barton, 2004; Sibai, 2004). The total and direct bilirubin was also elevated 17.8 and 4.8 umol/L respectively. The total bilirubin is a combination of direct and indirect bilirubin. Preeclampsia-related disorders including HELLP are the most common causes of jaundice in pregnant women (Duraiswamy *et al.,* 2017).

The lactate dehydrogenase was also raised 368 (iu/L). LDH is an intracellular enzyme and its level is increased in due to red cell destruction. When red cells are damaged, they release LDH into the bloodstream. Previous report indicates that high serum LDH levels correlate well with the severity of the disease and poor outcomes in patients of preeclampsia and eclampsia (Jaiswar *et al*., 2011). Our finding is consistent with a previous report (Catanzarite *et al*., 1995) which indicated that patients who had elevated levels of LDH who manifested with haemolysis, elevated liver enzymes, low platelet count (HELLP) syndrome were at a high risk for developing maternal mortality. Similarly, Demir and Colleagues (2006) reported that there was a statistically significant relation between maternal complications and high LDH levels.

Observation from the stained peripheral blood film demonstrated thrombocytopenia, normochromic red cells, target cells and occasional schistocytes. Our finding is consistent with previous report which indicated that abnormal peripheral smear including schistocytes is a common finding in HELLP syndrome (Sibai *et al*.,1993). Previous report indicates that HELLP syndrome patients had a lower platelet count and higher LDH than healthy controls (Paternoster *et al.,* 1995).

The fibrinogen level was slightly raised. Fibrinogen is a key component of thrombosis and normal haemostasis. During normal pregnancy, in order to prepare the pregnant woman for delivery, the level of fibrinogen in pregnant women will increase about twice as much as that in non-pregnant women (Cui *et al*., 2017; Haram *et al.,* 2017). The low prenatal fibrinogen level is a reliable biomarker to predict postpartum haemorrhage of pregnant women with HELLP syndrome. Previous report indicates that fibrinogen level in postpartum haemorrhage pregnant women with HELLP syndrome is lower than that in non-postpartum haemorrhage pregnant women with HELLP syndrome and healthy pregnant women (Cui *et al*., 2020).

Urinalysis result in the subject indicated that the nitrite and protein was positive. Previous report revealed the presence of white blood cells (Garrido *et al*., 2013). Proteinuria is typically one of the presenting symptoms in patients with eclampsia (Haram et al.,2009).

Suboptimal obstetrics care in developing countries may contribute to the progression and maternal mortality associated with the disease. A previous report in Ife, Nigeria reported that HELLP syndrome is more likely in unbooked eclamptic patients and is highly fatal (Makinde, *et al*.,2009). We lend our voice to the recommendation that all pregnant women presenting with signs of HELLP syndrome in our environment should have a full blood cell count inclusive of platelet count, liver enzymes and lactate dehydrogenase (Sibai, 1990). Efforts should be made to improve the knowledge of the disease among obstetricians in developing countries to facilitate prompt identification and optimum evidenced-based management to minimise both perinatal and maternal morbidity and mortality (Ayati *et al*.,2018).

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The authors confirm that there is no funding to declare and no conflicts of interest associated with this study.

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