CASE REPORT

The Liver and Foetus at Risk- Antiphospholipid Syndrome and HELLP Syndrome

Rekha Arcot, Sujatha Narayana Moorthy, Thallur Ramakrishnan Rajkumar, Annamalai Ravi

Abstract
Antiphospholipid Syndrome (APS) is an autoimmune disorder characterised by the association of thrombosis and obstetric complication. It is noted that the occurrence of haemolysis, elevated liver enzyme levels and low platelet count (HELLP) syndrome complicated with spontaneous rupture of liver is increased in APS associated pregnancy. We here report a case of a twenty six year old gravid female who developed foetal death and a subsequent spontaneous liver rupture due to HELLP syndrome and secondary APS. This report not only emphasises the prompt recognition of APS to pick up obstetrics and foetal complications early, but also points out the importance of the myriad presentations of APS.

Key Words
Antiphospholipid syndrome, HELLP syndrome, Spontaneous rupture of liver, Pregnancy

Introduction
Antiphospholipid syndrome (APS) also referred to as Hughes syndrome is an autoimmune disorder of coagulation leading to thrombotic and/or obstetric complications in a patient. The various pregnancy related complications include foetal death, recurrent abortions and intrauterine death that is attributed to the placental infarction triggered by a thrombotic event during pregnancy. (1) There is increasing evidence that APS is one of the important risk factors for the development of haemolysis, elevated liver enzyme levels and low platelet (HELLP) syndrome in pregnant women with a 10.6% incidence. (2) HELLP syndrome is a multisystem thrombotic microangiopathy responsible for high maternal and foetal death. The incidence of HELLP syndrome in pregnancy is about 0.01-0.2% of the general population [2], but its incidence among APS patients is increased. It has been identified that HELLP syndrome in pregnancy is an important risk factor for spontaneous liver rupture, a life threatening situation. (3)

Here we report a case of pregnancy complicated with foetal death and a subsequent spontaneous liver rupture due to HELLP syndrome in a patient with known secondary APS.

Case Report
A twenty six year old gravid female, (gestational age - twenty two weeks and six days), was brought to the casualty with complaints of lower abdominal pain of one day duration. She was a known case of APS associated with Systemic Lupus Erythematosus (SLE) that was complicated with history of recurrent abortions, chronic deep vein thrombosis (DVT) and mitral valve prolapse syndrome with paroxysmal supraventricular tachycardia. On further evaluation the patient was diagnosed with pre-eclampsia characterised by hypertension (160/100 mm Hg) and proteinuria. Blood investigations revealed altered liver enzymes, elevated Lactate Dehydrogenase (LDH) and thrombocytopenia which confirmed the diagnosis of HELLP syndrome (Table 1). Ultrasonography (USG) abdomen showed severe oligohydramnios and intrauterine growth retardation. The patient expelled the dead foetus spontaneously on the fourth post admission day. In the post evacuation period, she developed sepsis, coagulopathy, and a sudden drop in the haemoglobin level with gross abdominal distension. Computed Tomography (CT) abdomen was performed that revealed a large hemorrhagic collection in the subdiaphragmatic space (Fig.1). Following the administration of platelet
concentrate and fresh frozen plasma to correct the
thrombocytic count and International Normalised Ratio
(INR), the patient underwent an emergency laparotomy.
A large hematoma beneath the Glisson’s capsule in the
left lobe of the liver (Fig. 2) was evacuated and filled
with an omental patch. The patient had a stormy post
operative period with sepsis, disseminated intravascular
coagulation (DIC), systemic fungal infection, steroid
induced hyperglycemia and wound gaping. After
secondary suturing, with a prescription of Low Molecular
Weight heparin and low dose aspirin, the patient was
discharged after four weeks.

Discussion
APS, which may manifest as a primary or secondary
disorder, is a condition that occurs due to autoimmune
production of antibodies against anionic cell membrane
protein called phospholipids namely the cardiolipin,
phosphatidyl serine and beta-2 glycoprotein I. This leads
to an alteration in the haemostasis causing a recurrent
thrombotic and hypercoagulopathic state that can affect
almost any system of the body. Murine models have
hypothesised that anti-phospholipid (aPL) mediated
complement activation may be attributed to pregnancy
loss in APS patients. (4)

Studies to prove the association of HELLP syndrome
with aPL dates back to the year 1994. (5) HELLP
syndrome that is a part of the spectrum of hypertensive
disorders in pregnancy is diagnosed by the criteria (6) of
(1) abnormal peripheral smear. (2) Total bilirubin >1.2
mg/dl. (3) Lactate dehydrogenase >600 U/l. (4) Elevated
liver enzymes-Aspartate aminotransferase/alanine
Aminotransferase >70 U/l. (5) Low platelets <100x109/
l. Spontaneous rupture of liver is increasingly seen in

Table 1. Investigations to Confirm the Diagnosis of HELLP Syndrome

<table>
<thead>
<tr>
<th>Date</th>
<th>Hb (g/dl)</th>
<th>Total Count (cells/m³)</th>
<th>Platelet (lacs)</th>
<th>INR</th>
<th>PTT (sec)</th>
<th>LFT (AST/ALT) (unit/litre)</th>
<th>LDH (Unit/litre)</th>
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<tr>
<td>15/8</td>
<td>10.6</td>
<td>11180</td>
<td>1.75</td>
<td>0.99</td>
<td>85.0</td>
<td>69/49</td>
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<tr>
<td>21/8</td>
<td>9.0</td>
<td>13390</td>
<td>0.50</td>
<td>1.15</td>
<td>72.2</td>
<td>170/325</td>
<td>845</td>
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<tr>
<td>25/8</td>
<td>5.2</td>
<td>21160</td>
<td>0.70</td>
<td>1.95</td>
<td>80.4</td>
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<tr>
<td>26/8</td>
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<td>9670</td>
<td>0.60</td>
<td>1.18</td>
<td>62.3</td>
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<td>694</td>
</tr>
<tr>
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<td>8870</td>
<td>0.62</td>
<td>1.22</td>
<td>39.7</td>
<td>132/69</td>
<td>675</td>
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<tr>
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<td>7150</td>
<td>1.60</td>
<td>3.11</td>
<td>51.7</td>
<td>10/25</td>
<td>310</td>
</tr>
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</table>

HB- Haemoglobin, INR- International Normalised Ratio, PTT- Partial Thromboplastin Time, LFT- Liver Function Test, AST- Aspartate Aminotransferase, ALT- Alanine Aminotransferase, LDH- Lactate Dehydrogenase
APS associated pregnancy which attributed to vasospasm resulting from increased sensitivity to circulating vasopressors causes endothelial damage. This leads to a subsequent vessel damage triggering the event of microvascular thrombi formation and necrosis and ultimately ends in the spontaneous rupture of the liver. (7) Investigations in a known case of APS are aimed at detecting pre-eclampsia and HELLP syndrome and a close monitoring is done to pick up obstetrics and foetal complications early. (8) Sakhel et al. have reported a case similar to the one in this report where emphasis has been laid on the anticipation on morbid clinical course including liver infarction in patients with secondary APS complicated with HELLP syndrome. (9) Miyakis et al. have laid the revised criteria for diagnosis of APS (10) which was met by the patient of this report. Spontaneous liver rupture which is a consequence of HELLP syndrome can be diagnosed by CT abdomen, USG abdomen or Carbon Dioxide Intra-arterial Digital Subtraction Angiography. (11) Treatment with aspirin and Low Molecular Weight Heparin in APS patients aims at prevention of the development of HELLP syndrome and foetal loss. (2,12) In spontaneous liver rupture, various surgical procedures namely, evacuation of hematoma, hepatic artery embolisation/ligation, peri-hepatic packing or partial hepatic resection (13) have been suggested.

Another focus of attention has been the similarities between HELLP syndrome and Catastrophic Antiphospholipid Syndrome (CAPS) during pregnancy. (5, 14) A variant of APS is CAPS also known as Asherson's syndrome which is a life threatening condition characterised by generalised microvascular thromboses and multi-organ failure. CAPS is triggered by various factors like infections, surgery, malignancy, lupus flares and pregnancy. (5, 14) Gomez-Puerta et al reported cases of CAPS that showed an overlap with HELLP syndrome. (14) In a severe case of HELLP syndrome multiorgan failure can meet with the criteria of CAPS (5) which is similar to the present case. However it is pointed out that nosological distinction between the two does not modify treatment strategy, which is a maternal and foetal emergency, but their overlapping requires aggressive and early management. (15)

Conclusion
APS is a multi system disease which is of concern to the obstetrician, the physician, the gastroenterologist and the surgeon. Dedicated team work, knowledge of the myriad presentations and abundant resources are needed in managing these patients. While APS continues to cause foetal loss, prompt recognition and treatment prevents maternal mortality. We need to remember that in APS, the foetus, the mother and the liver are at risk.

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References