Liver Dysfunction in Hyperemesis Gravidarum

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ABSTRACT

Aim: To determine the frequency of liver dysfunction in patients with hyperemesis gravidarum.

Study design: It was a retrospective cross sectional study.

Place and duration: This study was done in the gastroenterology department of Timergara Teaching Hospital over a period of 1 year i.e., from September 2021 to August 2022.

Methods: 140 pregnant women admitted with diagnosis of hyperemesis gravidarum were included in this study after excluding liver disease. Data was collected from case files from the department of medical records. SPSS version 25 was used to analyze the data.

Results: Liver dysfunction was seen in 55.2% of patients with hyperemesis gravidarum. The mean age of patients with hyperemesis gravidarum was found to be 24.4±3.5 years and most cases were found to be primigravida i.e., 72.8%. Mean gestational age was found to be 9.2± 1.9 weeks. No significant difference in liver dysfunction was seen in relation to BMI.

Conclusion: Abnormal liver function tests is a common finding in cases of hyperemesis gravidarum which recover completely when resolution of hyperemesis occurs and needs no treatment.

Key words: Hyperemesis gravidarum, nausea and vomiting of pregnancy, liver dysfunction, liver function tests. ALT, AST.

INTRODUCTION

Approximately 75% of pregnant women present with either nausea or vomiting during pregnancy but hyperemesis gravidarum is present in only 0.3-2% pregnant women, in which nausea and vomiting is severe leading to water-electrolyte imbalance and more than 5% loss of body weight. Abnormal liver aminotransferase levels up to 200 U/L with associated mild hyperbilirubinemia (usually up to bilirubin of 4 mg/dl) can occur in 50% of cases of hyperemesis gravidarum1,2.

Because of lethal complications such as ketonuria, weight loss, and electrolyte imbalance hyperemesis gravidarum is a frequent reason for hospitalization among pregnant women, and its diagnosis is based on clinical judgment1-4. The differential diagnosis includes GERD, peptic ulcer disease, cholelithiasis, pancreatitis, small-bowel obstruction, acute cholecystitis, gastroenteritis, appendicitis, nephrolithiasis, pylonephritis, and hepatitis5. It usually starts in the first trimester 4-9 weeks, peaks at 12-15 weeks and most cases recover around 20 weeks of gestation, although some cases(9-20%) continue throughout pregnancy6.

The exact pathogenesis of hyperemesis is still under investigation, but increased levels of human chorionic gonadotropin (hCG) is considered a cause for hyperemesis gravidarum.7 Multiple pregnancy and gestational trophoblastic disease have high incidence of hyperemesis gravidarum due to high levels of beta HCG favors this hypothesis.8 In a large prospective study gastric Helicobacter pylori infection was also found to be higher in pregnant women who had severe hyperemesis gravidarum9.

During normal physiological changes in pregnancy, most liver function tests remain within normal range, except those produced by the placenta or affected by hemodilution like alkaline phosphatase (ALP) which is increased secondary to placental origin.10 So while interpreting liver function tests in pregnancy this should be kept in mind. Hyperemesis gravidarum complications include dehydration, hypokalemia, hypocalcemia, hypomagnesemia, abnormal liver function tests, hypochloremic metabolic alkalosis, pre-re nal acute kidney injury, venous thromboembolism (VTE), and transient hypothyroidism.11 Also fetuses of the mothers suffering from HG are at risk of preterm birth, low birth weight, still birth, NICU admissions and may also have long-term complications like high levels of serum cortisol, reduced insulin sensitivity, high BP, cardiovascular disease as well as mood and psychiatric problems in the later stages12.

Management includes avoidance of foods containing fats, strong odor and iron supplements, usage of ginger and oral medications such as doxylamine succinate, pyridoxine, metoclopramide and diphendydramine but severe cases need admission with IV fluids, electrolyte replacement and intravenous forms of antiemetics like metoclopramide, diphendydramine or ondansetron is required along with thiamine and gastric acid suppressive medications such as ranitidine and omeprazole. In refractory cases a short course of glucocorticoids is required with termination of pregnancy as the last resort, but it is rare.13 Prolonged illness needs nutritional support which can be given enterally through a Ryle’s tube, or parenterally14.

Much less research has been done on this topic in our settings. My study will determine frequency of liver dysfunction associated with hyperemesis gravidarum and it will help gynaecologists to avoid unnecessary interventions in such patients, as abnormal liver function tests due to HG need no treatment and will resolve spontaneously when Hyperemesis gravidarum settles15.

The burden of liver dysfunction in HG likely remains grossly underestimated by the medical community and this study will help us to know the exact burden of disease. In the long run, it may help us to make protocols for managing patients with hyperemesis gravidarum with liver abnormality.

MATERIALS AND METHODS

It was a retrospective cross sectional study conducted in the Department of gastroenterology, Timergara Teaching Hospital. The study was conducted from September, 2021 to August, 2022 for a duration of one year. The study was started after the ethical approval from hospital. A sample size of 140 was calculated with 95% confidence level, 8% margin of error and with expected frequency of liver dysfunction to be 60.3% in patients presenting with hyperemesis gravidarum.14 Sampling technique used was non-probability consecutive sampling. Records of women admitted with hyperemesis gravidarum were checked and women having preexisting or recently diagnosed liver disease were excluded from study. Demographic details (name, age, parity, gestational age,
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BMI) were obtained. The laboratory reports including serum bilirubin (total), ALT (alanine transaminase), AST (aspartate transaminase) were also assessed. The information was recorded on proforma. Data analysis was done by using computer program SPSS version 25. For the quantitative variables like age and gestational age means and standard deviation was calculated and frequencies and percentages were calculated for parity and liver dysfunction. Data was stratified for BMI (underweight, normal, overweight). Chi square test used for comparison of stratified groups taking p value < 0.05 as significant.

RESULTS

Frequency of liver dysfunction in patients with hyperemesis gravidarum in our study was found to be 55.2%.

Table 1: Demographic characteristics of study subjects

<table>
<thead>
<tr>
<th>Variables</th>
<th>n</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>45</td>
<td>31.8%</td>
</tr>
<tr>
<td>20-30</td>
<td>72</td>
<td>51.6%</td>
</tr>
<tr>
<td>&gt;30</td>
<td>23</td>
<td>16.6%</td>
</tr>
<tr>
<td>Mean age±SD (years)</td>
<td>24±4.53</td>
<td></td>
</tr>
<tr>
<td>Mean age±SD (years)</td>
<td>9.2±1.9</td>
<td></td>
</tr>
</tbody>
</table>

Table 1 shows 51.6% patients were in age group between 20-30 years and mean age was 24.4±4.53years while mean gestational age was 9.2±1.9 weeks. Most of the patients (72.8%) were primigravida.

Table 2: Liver function tests in study subjects

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Level</th>
<th>No of cases</th>
<th>% age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilirubin</td>
<td>&gt;1mg/dl</td>
<td>5</td>
<td>3.2%</td>
</tr>
<tr>
<td>ALT</td>
<td>&gt;40IU/L</td>
<td>78</td>
<td>56%</td>
</tr>
<tr>
<td>AST</td>
<td>&gt;40IU/L</td>
<td>57</td>
<td>40.8%</td>
</tr>
</tbody>
</table>

Table 2 shows abnormalities seen in liver function in patients with hyperemesis gravidarum. ALT was raised in 78%(56%) patients, AST in 57(40.8%) patients and only 5 patients showed abnormality in serum bilirubin level.

Table 3: Comparison of patients with HG and Liver dysfunction in relation to BMI

<table>
<thead>
<tr>
<th>BMI</th>
<th>Liver dysfunction</th>
<th>Total</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>46(36.8%)</td>
<td>4(26.8%)</td>
<td>50</td>
</tr>
<tr>
<td>Normal</td>
<td>45(36.8%)</td>
<td>3(20%)</td>
<td>48</td>
</tr>
<tr>
<td>Overweight</td>
<td>33(26.4%)</td>
<td>8(53.3%)</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>125</td>
<td>15</td>
<td>140</td>
</tr>
</tbody>
</table>

Table 3 shows comparison of patients with hyperemesis gravidarum and liver dysfunction in relation to body mass index (BMI). As p value was >0.05 i.e., the results were insignificant showing no difference in relation to BMI.

DISCUSSION

The liver disorders specific to pregnancy include, hyperemesis gravidarum, HELLP syndrome, intrahepatic cholestasis of pregnancy, acute fatty liver of pregnancy. Among these hyperemesis gravidarum was found to be most common cause of abnormal liver function tests in first trimester of pregnancy i.e., 54.3%

In our study the prevalence of abnormal liver function tests in patients with hyperemesis gravidarum was found to be 55.2% which is similar to other studies.

Mean age of patients with hyperemesis gravidarum in our study was 24.4 years. In another study conducted by Singh P et al, the mean age of patients with hyperemesis gravidarum was 24.7 years same as in our study. This suggests that hyperemesis gravidarum affects young age patients more. The reason behind this could be that most of the patients get married in this age group in our society and so more pregnancies occur in this age group.

In our study 73% patients were primigravida and 27% patients were multigravida. Similar results were observed by Hussein KS. Among liver enzymes ALT was found to be raised in 56% of cases as compared to AST which was raised in 40% of cases while a very less percentage of patients showed abnormality in serum bilirubin levels (3.2%). Our results correlate with results observed by Gaba N et al, and Nadeem S et al. The reason derangement of ALT more is not known but this could be due to longer half-life of ALT as compared to AST. Further studies would be needed to know the exact etiology of rising ALT more than AST in hyperemesis gravidarum.

Abnormality in liver function was compared according to BMI of patient and no significant difference was found in relation to BMI in our study. This is in contrast to a study conducted by kocher T et al, which showed that liver abnormality was more in patients having high BMI.

CONCLUSION AND RECOMMENDATIONS

Abnormality in liver function tests is a common in patients with hyperemesis gravidarum. When the diagnosis of abnormal liver function tests is clear, no further treatment is needed as it will recover completely as hyperemesis resolves without any permanent liver damage. Further studies should be done to know the reason of more increase of ALT as compare to AST in cases of hyperemesis gravidarum.

Limitations: As this was a retrospective study so, there could be some missing data in records which could jeopardize results.

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Conflict of interest: Nothing to declare

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