suPAR(II-III) and suPAR(I) levels was found in serum from allogeneic but not from autologous patients after G-CSF (Figure 1B-C). In paired samples, G-CSF significantly augmented serum levels of the different suPAR forms in allogeneic donors, confirming recently published results (Figure 1D-F). In contrast, however, in serum from the autologous group, neither full-length suPAR(I-III) and suPAR(II-III) levels, nor suPAR(I) levels, increased after chemotherapy plus G-CSF treatment (Figure 1G-I). Most importantly, serum levels for full-length (Figure 1J-K) or cleaved suPAR (data not shown) after G-CSF administration did not correlate with CD34+ counts in both groups, but did correlate with leukocyte counts (data not shown).

On the basis of our data, we propose that the leukocyte increase after G-CSF is responsible for higher full-length suPAR serum levels, possibly through G-CSF–mediated induction of proteases in neutrophils. A successful progenitor cell mobilization after G-CSF treatment, as observed in the patient group receiving chemotherapy, does not necessarily correlate with increased suPAR serum levels.

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T.F. designed and performed research, analyzed data, and wrote the letter; K.H. designed research; E.T. designed research and reviewed the letter; and B.H. designed research, analyzed data, and wrote the letter.

References


To the editor:

Treatment of chronic hepatitis C in patients with glucose-6-phosphate dehydrogenase deficiency: is ribavirin harmful?

Treatment for chronic hepatitis C is based on combination therapy with pegylated interferon and ribavirin (RBV). One of the most important side effects of RBV is hemolytic anemia, which may require RBV dose reduction or discontinuation with a significant metabolic effect. We therefore aimed to compare the efficacy of pegylated interferon and RBV therapy in patients with and without glucose-6-phosphate dehydrogenase (G6PD) deficiency.

Table 1. Baseline characteristics of the patients

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Patients without G6PD deficiency</th>
<th>Patients with G6PD deficiency</th>
<th>Female with partial G6PD deficiency*</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of patients</td>
<td>82</td>
<td>26</td>
<td>4</td>
</tr>
<tr>
<td>Age, y</td>
<td>44.48 ± 10.34</td>
<td>45.40 ± 9.66</td>
<td>45.55 ± 12.62</td>
</tr>
<tr>
<td>Male, no. (%)</td>
<td>73 (89)</td>
<td>20 (77)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Weight, kg</td>
<td>71.29 ± 10.45</td>
<td>69.93 ± 11.83</td>
<td>55.35 ± 4.73</td>
</tr>
<tr>
<td>Body mass index†</td>
<td>24.95 ± 2.77</td>
<td>24.88 ± 3.14</td>
<td>23.50 ± 2.65</td>
</tr>
<tr>
<td>Mean corpuscular volume, μm²</td>
<td>83.54 ± 9.28</td>
<td>87.05 ± 7.54</td>
<td>95.75 ± 0.25</td>
</tr>
<tr>
<td>Hemoglobin, g/dL§</td>
<td>14.37 ± 1.18</td>
<td>13.32 ± 1.06</td>
<td>13.50 ± 0.94</td>
</tr>
<tr>
<td>Bilirubin, mg/dL</td>
<td>0.60 ± 0.27</td>
<td>0.76 ± 0.43</td>
<td>1.10 ± 0.51</td>
</tr>
<tr>
<td>Ribavirin administered/body weight, mg/kg</td>
<td>13.75 ± 1.15</td>
<td>13.52 ± 1.19</td>
<td>14.53 ± 1.21</td>
</tr>
<tr>
<td>Alanine aminotransferase, U/L§</td>
<td>112.90 ± 93.20</td>
<td>151.90 ± 117.60</td>
<td>119.50 ± 44.74</td>
</tr>
<tr>
<td>Mean HCV RNA level, IU/mL × 10^6</td>
<td>0.72 ± 0.48</td>
<td>0.67 ± 0.67</td>
<td>0.91 ± 0.70</td>
</tr>
<tr>
<td>HCV genotype, no. (%)</td>
<td>1</td>
<td>34 (41)</td>
<td>13 (50)</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>9 (11)</td>
<td>4 (15)</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>22 (27)</td>
<td>7 (27)</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>17 (21)</td>
<td>2 (8)</td>
</tr>
</tbody>
</table>

Data are expressed as means ± SD. Conversion to SI units for bilirubin: mg/dL × 17.1 = μM.

*Patients with partial G6PD deficiency were not included in the statistical analysis because of their small number.
†P < .001 for the comparison between patients with and without G6PD deficiency, by Mann-Whitney test.
§Normal value, ≤ 41 U/L.

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decrease in the rate of sustained virologic response (SVR). Little is known about the safety of RBV treatment in patients with concomitant glucose-6-phosphate dehydrogenase (G6PD) deficiency, who are inherently prone to hemolysis.

We prospectively studied changes in hemoglobin (Hb) levels in 112 patients with chronic hepatitis C, associated or not with G6PD deficiency, during and after combination therapy. G6PD activity was tested by a spectrophotometric method.

Twenty-six (23.2%) patients (6 women, 20 men) had G6PD deficiency; 4 (3.6%) women had partial deficiency, who are inherently prone to hemolysis. Improved outcome in central nervous system aspergillosis was reported to date. In this study, complete and partial responses to the treatment with pegylated interferon and ribavirin in patients with chronic hepatitis C with and without G6PD deficiency. N Engl J Med. 2002;347:975-982.

The baseline characteristics of the 2 groups of patients were similar, except for the mean Hb levels that were significantly lower (P < .001) in patients with G6PD deficiency (Table 1). This difference persisted at weeks 2 and 4 of therapy (Figure 1A). Subsequently, however, the Hb levels were no longer different between the 2 groups. One month after completion of therapy, Hb returned to baseline levels in patients with G6PD deficiency, while it was still significantly lower than baseline in those without G6PD deficiency (P < .001). The mean changes in Hb levels from baseline to week 2 or 4 of therapy were similar in patients with and without G6PD deficiency, then became significantly greater in patients without G6PD deficiency until week 24 of therapy (Figure 1B). None of the patients prematurely discontinued therapy because of anemia. Adjustments of the RBV dose were required in 11.5% and 9.8% of patients with and without G6PD deficiency, respectively (P = .724). Thus, the presence of G6PD deficiency was not associated with a significant risk of RBV discontinuation or dose adjustments. The rate of SVR, defined as undetectable hepatitis C virus (HCV) viremia 24 weeks after cessation of therapy, was 61% in patients with G6PD deficiency and 71% in those without G6PD deficiency (P = .336), indicating that G6PD deficiency was not associated with a significantly lower rate of SVR.

Although patients with G6PD deficiency had lower Hb levels at baseline, most likely due to chronic hemolysis, they failed to show a more profound Hb decrease during treatment. Moreover, they showed an earlier achievement of pretreatment levels after therapy, suggesting a better fitness of G6PD-deficient erythrocytes under RBV stress. Our findings have important clinical implications, as they provide evidence that patients with chronic hepatitis C and G6PD deficiency can be successfully treated with peginterferon-alfa and RBV without an increased risk of RBV-induced anemia.

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References


To the editor:

Improved outcome in central nervous system aspergillosis

In a recent Blood article, Schwartz et al reported on the largest cohort of patients with central nervous system (CNS) aspergillosis published to date. In this study, complete and partial responses were recorded in 35% of patients, which is much better than previous reports, when mortality rates were close to 100%. The authors concluded that voriconazole treatment together with
Treatment of chronic hepatitis C in patients with glucose-6-phosphate dehydrogenase deficiency: is ribavirin harmful?

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