comes problems of turbidity caused by proteins other than fibrinogen. Furthermore, the very small (2 µL) sample size makes it additionally attractive for use with pediatric samples.

References

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Concentrations of Transthyretin (Prealbumin) and Retinol-Binding Protein in Alcoholic During Alcohol Withdrawal

To the Editor:

The recent review article on the assessment of protein-calorie malnutrition discusses the use of serum transthyretin (prealbumin) and retinol-binding protein (RBP) in the investigation of nutritional status (1). It was noted that concentrations of transthyretin in serum are an unreliable index of nutritional status in patients with chronic intestinal disease (2) and may also indicate dietary intake rather than nutritional status (3).

Because chronic alcoholics may well be undernourished, we measured serum concentrations of transthyretin and RBP in 32 patients (29 men and three women) admitted to a rehabilitation hospital after excessive consumption of alcohol. The average age of the patients was 43 years (range, 20 to 65), and the average length of alcohol abuse was 12 years (range, 1 to 40).

Clinical evidence showed no evidence of concurrent illness. All patients received the same hospital diet, and total abstinence was ensured whilst the patients were in hospital. Fasting blood samples were taken on the day after admission to establish baseline values for each patient; further samples were taken weekly for the next three weeks.

Serum aliquots were kept frozen at −20 °C with subsequent analysis of transthyretin by a modified nephelometric assay (4), RBP by radial immunodiffusion (5), and albumin by a standard brom cresol green procedure (6).

We found that the concentrations of albumin were normal in all patients on admission and the mean did not change significantly during the course of the study (Table 1). In contrast, concentrations of transthyretin significantly decreased (p < 0.05) between admission and the second week. RBP concentrations showed a significant decrease (p < 0.05) between admission and the first week, with no further significant decrease thereafter. Interestingly, eight patients on admission had a transthyretin concentration greater than the reference range (0.1–0.4 g/L), whilst 25 patients had RBP exceeding the reference range (30–60 mg/L).

The increase in RBP and transthyretin may be due to decreased catabolism or clearance, increased secretion or loss from the liver cells, with or without increased hepatic synthesis of these proteins induced by alcohol, or a combination of these factors. From animal studies, it appears that chronic alcohol feeding probably increases degradation of protein and will not account for the changes observed. An increased accumulation of other transport proteins such as albumin and transferrin in the liver after chronic ethanol feeding, probably from a combination of increased synthesis and defective secretion into the plasma, has also been proposed (7). If concentrations of transthyretin and RBP are increased in the hepatic cytosol of chronic alcoholics, then an increased secretion or loss of these proteins into the circulation after acute alcohol abuse could explain the observed results. Other studies have shown impaired hepatic cellular metabolism of glycoproteins (major components of cell membranes) with ethanol intake (8) and a dose-related effect on the "fluidity" of biological membranes (9). One could speculate from the results of our study that the escape of these transport proteins from the cytosol into the circulation would be greatest at the time of admission, corresponding with acute intoxication before admission. Subsequently, loss of transport proteins from hepatic cells and their serum concentrations would be expected to fall due to alcohol withdrawal.

This study suggests that alcohol consumption has to be taken into consideration when the concentrations of certain serum proteins are used to assess nutritional status.

References

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<table>
<thead>
<tr>
<th>Table 1. Changes in Concentrations of Nutritional Markers in Alcoholics Undergoing Withdrawal Treatment</th>
<th>Weeks of treatment</th>
<th>Ref. range</th>
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<tbody>
<tr>
<td>Albumin, g/L</td>
<td>40.1</td>
<td>41.3</td>
</tr>
<tr>
<td>Transthyretin, mg/L</td>
<td>364</td>
<td>302</td>
</tr>
<tr>
<td>RBP, mg/L</td>
<td>76</td>
<td>66</td>
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<tr>
<td>No. of patients</td>
<td>32</td>
<td>30</td>
</tr>
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