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Platelet Counts in Normal Pregnancy

We are pleased to be able to confirm the findings of Sejeny et al (J. clin. Path., 28, 812-813, 1975) that, using a Coulter Counter, the platelet count decreases progressively and significantly in normal pregnancy. Sejeny et al suggest, without adding any evidence, that this decrease in count may be due to an increase in plasma volume. We, however, have evidence that does not prove, but strongly suggests, that this haemodilutional effect is not nearly sufficient to account for the observed drop in platelet count.

We have studied about 30 patients in each trimester and 24 non-pregnant women. The results will be published elsewhere, but in brief we have found a significant progressive decrease in count and increase in the mean platelet volume so that the total platelet volume mass per ml (volume \( \times \) numbers/ml) remained approximately constant. The concept of a constant total platelet mass has been reported before (O'Brien and Jamieson, 1974; Behrens, 1975). Additionally, we found marked shortening of the heparin thrombin clotting time of platelet-poor plasma. This may perhaps reflect the presence of platelet factor 4 liberated into the plasma as the result of thrombosis that occurs normally and extensively even in the healthy placenta.

From the table it will be seen that, as expected, the haemoglobin falls progressively through pregnancy. The packed cell volume also fell but there was no evidence of iron deficiency developing since the MCHC remained constant. Therefore it seems reasonable to assume that the fall in haemoglobin reflected a relative increase in plasma volume. Assuming that the original total platelet count remained constant, in this case the mean was \( 272 \times 10^9/\)l, it is then possible to calculate what the count would have been if it had been diluted in the increased plasma volume as had the red cells. It will be seen that the observed count decreased far in excess of the calculated figure due to haemodilution. Thus very probably the total number of circulating platelets per unit volume decreases absolutely.

References


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Amylase Assay by the Phadebas Method

In the past we have personally corrected a misconception among some colleagues concerning the assay of amylase by the Phadebas method but now that this erroneous notion has recently appeared in print it becomes necessary to respond likewise. Ojala and Harmoinen (1975), in the discussion on the methodology of the Phadebas amylase kit (Pharmacia AB), confirm the manufacturer's literature that the substrate does not remain suspended but sinks after the initial shaking at the beginning of incubation. They then go on to claim that 'a clearly higher and better reproduced amylase value was obtained by shaking the mixture by hand vigorously during the entire incubation'. We find no significant difference in activity or reproducibility of the assay whether the reaction tubes are (A) shaken or (B) remain unshaken during incubation: A mean amylase value = 501 \( \pm \) 12 U/l, n = 10 B mean amylase value = 500 \( \pm \) 12 U/l, n = 10.

Higher absorbances were encountered with the shaken tubes (A), as were noted originally by Ceska et al (1969), but this was paralleled by a higher absorbance of the blank.

The implication of the statement of Ojala and Harmoinen is that while the substrate sediments the enzyme remains in solution in the supernatant. However, it can readily be shown by the experiments detailed below that the amylase is adsorbed on to the solid phase substrates during the initial mixing after addition of the tablet. A further series of reaction tubes containing the same serum was centrifuged immediately after addition of the tablet to the assay mixture. The supernatants were decanted into clean tubes, absorbances were noted, and incubation was carried out after the addition of a further tablet. The increase in absorbance in this series was minimal (4A \( < \) 0•01). Simultaneously with this series, 4 ml of 0•9% saline was added to the residues in the original tubes and the assay procedure was continued. The

<table>
<thead>
<tr>
<th></th>
<th>Controls</th>
<th>1st Trimester</th>
<th>2nd Trimester</th>
<th>3rd Trimester</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haemoglobin (g/dl)</td>
<td>13.4</td>
<td>12.7</td>
<td>12.5</td>
<td>12.2</td>
</tr>
<tr>
<td>Packed cell volume</td>
<td>0.41</td>
<td>0.39</td>
<td>0.38</td>
<td>0.37</td>
</tr>
<tr>
<td>Haemoglobin per unit volume (MCHC)</td>
<td>32.7</td>
<td>32.6</td>
<td>32.9</td>
<td>33.0</td>
</tr>
<tr>
<td>Observed platelet count (x 10^11)</td>
<td>272</td>
<td>249</td>
<td>243</td>
<td>210</td>
</tr>
<tr>
<td>Expected count due to haemodilution</td>
<td>—</td>
<td>257</td>
<td>253</td>
<td>247</td>
</tr>
</tbody>
</table>

Table: Possible effect of haemodilution on platelet count: means

Letters to the Editor

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