Assessment of some coagulation parameters in chronic kidney disease patients attending Specialist Hospital in Sokoto, Nigeria

Imoru Momodu PhD¹, Janga Abdulrahman Dahiru PhD², Hamidu M. Liman PhD³

BACKGROUND: Chronic kidney disease (CKD) has become a major health concern in developing countries while the risk of bleeding episodes has been reported to be in 2-fold in patients with renal failure. The aim of this study was to assess coagulation parameters in CKD patients.

MATERIAL AND METHODS: Fifty patients with CKD and 50, apparently healthy subjects were recruited and studied for prothrombin time (PT), activated partial thromboplastin time (APTT) and fibrinogen level using standard techniques.

RESULTS: The study showed significantly higher mean values for PT and APTT in CKD patients compared to the control groups (P<0.05). Age and stages of CKD showed no significant effects on PT, APTT and fibrinogen level (P>0.05). Gender showed no significant influence on PT and APTT values (P>0.05) but revealed significant impact on fibrinogen level (P<0.05).

CONCLUSION: Changes in coagulation parameters in CKD patients are associated with prolonged PT and APTT while gender, age and stages of CKD had little or no influences on PT, APTT and fibrinogen level. These findings will serve as guide to the physicians in the management and monitoring of CKD patients.

Key Words: Chronic kidney disease; Haemodialysis;
momodu et al

**DISCUSSION**

Chronic renal failure (CRF) is associated with multiple complex alterations in coagulation. Although, excessive bleeding following trauma and during surgical procedures in patients with CRF continues to be a problem. However, an increased incidence of thrombotic complications has also been reported (17-19). This study has shown significantly higher values of PT and APTT in CKD patients. This is in agreement with some of the previous reports (20-22) but in contrary with the findings of other researchers who reported (17-19). This study has shown significantly higher values of PT and APTT in stages of CKD could contribute to the divergent opinions oppressed by the authors (20), (22-24). Prolongation of PT and APTT in CKD patients could be associated with bleeding and this may probably be due to deficiencies of blood coagulation factors that are linked to extrinsic and intrinsic blood coagulation pathways. Our study has revealed that gender had no significant influence on PT and APTT values and this observation is similar to the previous study (21). Fibrinogen level in this study showed a significantly higher value in females with CRF compared to the males with CKD (25,26). However, elevated level of plasma fibrinogen has been linked to an increased prevalence of coronary heart disease (CHD) both in normal situation (27) as well as in dialysis patients (28), apart from contributing directly to a hypercoagulable state (29). This study has further revealed that PT and APTT levels were not significantly influenced by stages of CKD. Limited data are available on the effects of CKD on coagulation parameters. These findings are in agreement with the earlier reports (22-24). Fibrinogen levels have shown no significant differences with respect to stages of CKD in this study but these are in contrary to earlier reports (22,24). The mechanisms responsible for the inconsistency in fibrinogen levels with respect to stages of CKD are not understood. However, variation in sample numbers and laboratory techniques could be contributory factors.

**CONCLUSION**

It was also observed in this study that age had no effect on PT, APTT and fibrinogen level. However, this is in partial agreement with the study of Aral et al. (31) who showed that PT levels differ between ages but APTT levels showed no difference with ages. In conclusion, changes in coagulation parameters in CKD patients could be associated with prolonged PT and APTT. However, gender, age and stages of CKD had little or no influence on the values PT, APTT and fibrinogen level in CKD patients. These findings will serve as guide in the management and monitoring of CKD patients. It is therefore recommended that PT and APTT be carried out as routine tests on every CKD patient since insufficient function of coagulation cascade has been associated with bleeding disorders (9,10).

**REFERENCES**

15. Takagi M, Wada H, Mukai K, et al. Increased activated protein C: protein C inhibitor complex and decreased protein C inhibitor levels in

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**TABLE 3**

<table>
<thead>
<tr>
<th>Parameters</th>
<th>PT (s)</th>
<th>APTT (s)</th>
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<tbody>
<tr>
<td>15-24yrs</td>
<td>17.4±6.9</td>
<td>46.9±9.3</td>
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<tr>
<td>25-34yrs</td>
<td>20.4±7.4</td>
<td>48.3±7.6</td>
</tr>
<tr>
<td>35-44yrs</td>
<td>21.3±11.2</td>
<td>47.3±9.0</td>
</tr>
<tr>
<td>45-54yrs</td>
<td>20.1±9.5</td>
<td>44.4±8.7</td>
</tr>
<tr>
<td>55-64yrs</td>
<td>17.2±6.2</td>
<td>44.4±10.2</td>
</tr>
</tbody>
</table>

| Fibrinogen level (g/L) | 1.98±0.6 | 2.16±0.7 |

**TABLE 4**

<table>
<thead>
<tr>
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<td>44.4±10.2</td>
</tr>
</tbody>
</table>

| Fibrinogen level (g/L) | 2.02±0.7 | 2.08±0.7 |

**REFERENCES**

15. Takagi M, Wada H, Mukai K, et al. Increased activated protein C: protein C inhibitor complex and decreased protein C inhibitor levels in


