Although the relationship between markers of disordered mineral metabolism and cardiovascular mortality is established, the relationship with sudden cardiac death (SCD) is less clear. Karnik et al. found that hemodialysis patients who experienced a witnessed cardiac arrest had lower serum phosphorus levels than population controls, and we previously reported no significant relationship between serum calcium, phosphorus and PTH levels, and survival following a witnessed peridialytic cardiac arrest. Prospective randomized studies are needed to examine the effect of current therapeutic options for abnormal mineral metabolism and cardiovascular benefit, including SCD.


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**The Authors Reply:** We appreciate the interest of Drs Ebihara and Kohzuki regarding our paper. We present here our reply per their request.

First, regarding the effect of angiotensin-converting enzyme inhibitors (ACEIs) and angiotensin-2 receptor blockers (ARBs) on taste disturbance, these drugs were administered to 21 patients (72%) in our study. We further analyzed the effects of these drugs, which revealed that the recognition threshold for salty taste was 0.91 ± 0.31% for patients who were administered these drugs and 0.80 ± 0.11% for those who

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### Table 1 | Baseline characteristics of the study cohort

<table>
<thead>
<tr>
<th>GFR ≥ 60</th>
<th>GFR 15–59</th>
<th>GFR &lt; 15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>14,652</td>
<td>4,364</td>
</tr>
<tr>
<td>Median calcium (mg/dl)</td>
<td>8.7</td>
<td>8.7</td>
</tr>
<tr>
<td>No. of subjects with data (%)</td>
<td>2618 (18%)</td>
<td>782 (19%)</td>
</tr>
<tr>
<td>Median phosphorus (mg/dl)</td>
<td>3.3</td>
<td>3.6</td>
</tr>
<tr>
<td>No. of subjects with data (%)</td>
<td>2504 (18%)</td>
<td>782 (19%)</td>
</tr>
<tr>
<td>Calcium x phosphorus</td>
<td>29</td>
<td>31</td>
</tr>
<tr>
<td>No. of subjects with data (%)</td>
<td>2424 (17%)</td>
<td>750 (17%)</td>
</tr>
</tbody>
</table>

Abbreviation: GFR, glomerular filtration rate.
were not. The detection thresholds were $0.77 \pm 0.24\%$ and $0.68 \pm 0.10\%$, respectively. Both thresholds were higher in patients administered ACEI or ARB; however, these differences were not statistically significant. Because we did not mainly focus on the effects of the administered drugs on gustatory threshold in this study, we cannot exclude the possibility that the small sample size might have led to an inadequate assessment as described in the limitations.

Second, Ebihara and Kohzuki pointed out the possibility that the change of administered drugs during the study period might have affected the improvement in gustatory threshold. However, the administered drugs were not changed during the study period, indicating that sodium restriction, even for 1 week, definitely improves the gustatory threshold.

Unfortunately, it is still unclear whether the high prevalence of ARB or ACEI use in chronic kidney disease (CKD) patients overcomes the impact of other factors (e.g., uremic status, abnormal zinc metabolism, excessive sodium intake, and administered drugs). Knowledge about taste disturbance in CKD is limited, and hence further investigations into this topic are required.


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