Ideal pre-HD Ca levels seem to be invalid (because serum Ca concentration tend to decline with higher serum P concentration) compared to P and Ca–P product. High levels of these parameters are well known to be associated with higher rate of vascular calcification, cardiovasculac events and death [3–5]. However, hypercalcemia is well known as one of the risk factors for vascular calcification, and several studies [6–8] have shown that the dose of calcium-based phosphate binders is associated with vascular calcification. At present, as Ix et al. describes [9], we should aim to control Ca, P and PTH within the target levels using adequate dose of oral phosphate binders and activated vitamin D derivates, in accordance with K/DOQI and Japanese guidelines [2,10], based on available scientific evidences. More studies on dialysate level, Ca/P metabolism, PTH and other hormones are needed to prevent vascular calcification in dialysis patients.

Conflict of interest statement. None declared.

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Conflict of interest statement. None declared.

Confirming high prevalence of patients with a high risk for obstructive sleep apnoea syndrome after kidney transplantation

Sir,

We read with interest the article recently published by Molnar et al. [1] in this journal. We performed a case-series retrospective study, including 47 patients who underwent a renal transplantation [2]. The aim of our study was to analyse whether obstructive sleep apnoea syndrome (OSAS) was more frequent and more severe after renal transplantation in obese patients: [body mass index (BMI) measured at transplantation time >30] vs non-obese patients: (BMI <30). All patients filled a questionnaire about OSAS-related symptoms at the same time (mean time from transplantation: 60 months). A 10-channel cardio-respiratory polygraphy (ApnoeScreen®, Jaeger®) was performed. We considered OSAS if apnoea–hypopnea index (AHI) was ≥10 and severe OSAS when AHI was ≥30. Demographic data were similar between both groups (age, gender, immunosuppression, renal function and blood pressure) except for mean BMI at the moment of the inclusion (39 ± 7.5 and 25 ± 3 in groups A and B, respectively).

<table>
<thead>
<tr>
<th>Group A (Obese n = 27)</th>
<th>Group B (Non-obese n = 20)</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>OSAS 25 (93%)</td>
<td>19 (95%)</td>
<td>NS</td>
</tr>
<tr>
<td>AHI 41 ± 21</td>
<td>21 ± 10</td>
<td>0.001</td>
</tr>
<tr>
<td>Severe OSAS 18 (66.6%)</td>
<td>6 (30%)</td>
<td>&lt;0.0025</td>
</tr>
<tr>
<td>CPAP therapy 20 (74%)</td>
<td>12 (60%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

Remarkably, the prevalence of OSAS was almost universal in both groups. In the multivariable analysis, obesity was the only independent significant risk factor for severe OSAS [OR 5.7(1.32–24.7) CI 95%].

According to Miklos et al. our data support the finding of an extremely high prevalence of OSAS in patients after kidney transplantation, even in non-obese patients, and it seems confirmed by sleep study, not only through OSAS symptoms-related questionnaires.

Conflict of interest statement. None declared.

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1. Molnar MZ, Szentkiralyi A, Czira A, Szabo A, Musci I, Novak M. High prevalence of patients with a high risk for obstructive sleep...


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Reply

Sir,

We thank Diaz-Atauri et al. [1] for their comments on our recent article. Their results certainly strengthen one of the points we made that obstructive sleep apnoea is surprisingly frequent in the kidney transplant population. This is clearly important, as there is substantial evidence suggesting an association between the presence of sleep apnoea and cardiovascular morbidity and even mortality. Furthermore, our yet unpublished results suggest that the presence of OSAS is an independent predictor of graft failure in renal transplant patients (Molnar et al., unpublished).

It is well documented that sleep disorders, restless legs syndrome (RLS), insomnia and OSAS being the most prevalent ones, are frequent in dialysis patients. We have shown that the prevalence of both RLS [2] and insomnia [3] is reduced in transplanted patients compared to waitlisted dialysis patients. It was, therefore, quite surprising to find out that this may not be the case for OSAS. In our cohort of 841 unselected transplanted patients the prevalence of high risk for OSAS was 27%. Further data have recently been published which corroborated our findings. Beecroft et al. [4] have reported in *NDT* that the apnoea–hypopnoea index has not improved substantially after successful kidney transplantation in 18 patients who had undergone standard polysomnography for suspected sleep apnoea. In their series, 11 of the 18 patients studied (61%) had OSAS.

We believe that OSAS has to be diagnosed by standard overnight polysomnography. Any other methods should only be considered as screening methods to select high risk patients for the definitive polysomnographic study. We are currently conducting a study enrolling a random sample of our transplant population to undergo overnight polysomnography. Our preliminary data obtained from 33 patients show that the prevalence of mild, moderate and severe OSAS (AHI cut-off 5, 15, 30, respectively) was 42%, 27%, 12%, respectively. These results are in fairly good agreement with our earlier data and also with the results of Beecroft et al. The very high prevalence of OSAS (>90%) found by Diaz-Atauri and co-workers in their retrospective case-series study is quite surprising and somewhat difficult to reconcile. Unfortunately, we do not know if their sample had been selected on the basis of suspected sleep apnoea which would make their findings more plausible.

Additional information is still needed, however, before we know the true prevalence of OSAS in the kidney transplant population.

Diaz-Atauri and colleagues found that severe sleep apnoea was more frequent in obese patients (BMI >30 kg/m²). Our preliminary findings in our polysomnography study seem to be in concert with the data presented by Diaz-Atauri, although we had only four patients with a BMI >30 kg/m². In our data set the AHI score was significantly correlated with BMI (ρ = 0.359), abdominal (ρ = 0.548) and neck circumference (ρ = 0.438); P < 0.05 for all. The prevalence of OSAS was similar in the obese and non-obese groups, however, possibly due to the insufficient statistical power. Once our study is complete we hope to shed some light on the important clinical correlates of OSAS in the renal transplant population.

Conflict of interest statement. None declared.

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