



See article by Thongprayoon and Cheungpasitporn on pages 26-28



Hyperparathyroidism after renal transplantation

Farahnaz Dadras¹, Farhad Khoshjou^{2*}

Dear Editor

We studied with great interest the paper by Thongprayoon and colleague entitled “Persistent hyperparathyroidism after kidney transplantation; updates on the risk factors and its complications” (1), in the valued *Journal of Parathyroid Disease*. It explains effects of persistent hyperparathyroidism (HPT) on kidney transplantation (e.g. bone diseases/fracture and allograft dysfunction). However, we are going to add some other points related to this topic.

The persistency of HPT after transplant has been described differently by diverse groups and there is not consensus about it. It is characterized as PTH ≥ 100 $\mu\text{g}/\text{mL}$ by Gomes et al (2). Others mentioned that PTH > 90 $\mu\text{g}/\text{mL}$ is the cut off (3). However, there is another definition, as well as PTH > 65 $\mu\text{g}/\text{mL}$ (4).

It has been demonstrated that 72 months of dialysis period and calcium phosphate products of $55 \text{ mg}^2/\text{dl}^2$ (5) are among risk factors of persistent HPT. Furthermore, existence of nodular hyperplasia in parathyroid glands along with low weight has been showed to engage in persistent HPT (6). Regarding to pathophysiology of bone involvement in persistent HPT, it has been pointed out that sclerostin, an osteocyte-secreted requisite for osteoblast development, decreases by high PTH levels and augments after parathyroidectomy (7). Besides, identifying bone health parameters (density, microarchitecture, and mechanical properties) helps to recognize patients at high risk of post-transplantation fractures (8). There are also rare cases of calciphylaxis after kidney transplantation accompanied by persistent HPT (9).

Management

Paricalcitol prescription has not negative effects on kidney function (10). It decreases intact PTH and increases bone mineral density in recently transplanted kidney recipients (11). However, it is not accompanied by advantages on osteopenia (12).

Cinacalcet has been recommended to manage post-transplantation persisted HPT (13-17). Pre-transplant prescription has been recommended by others, demonstrating that pre-transplant administration of

■ Implication for health policy/practice/research/medical education

Identifying bone disorders after kidney transplantation, their risk factors and managements is a great challenge. One of them, persistent hyperparathyroidism, has been focused here.

■ **Keywords:** Hyperparathyroidism, kidney transplantation, cinacalcet, parathyroidectomy

cinacalcet was considerably allied with reduced post-transplant hyperparathyroidism (18).

Parathyroidectomy has been suggested by others as a harmless process (19) and in long-term there was no significant difference between them and cinacalcet using group (20).

There is also an interesting report of rigorous bone loss with persistent HPT in a kidney recipient efficiently managed by Denosumab and vitamin D combination (21).

Authors' contribution

FD prepared the primary draft. FK prepared the final paper.

Conflicts of interest

The authors declare that they have no conflict of interests.

Ethical considerations

Ethical issues (including plagiarism, data fabrication, double publication) have been completely observed by the authors.

Funding/Support

None.

References

1. Thongprayoon C, Cheungpasitporn W. Persistent hyperparathyroidism after kidney transplantation; updates on the risk factors and its complications. *J Parathyroid Dis.* 2018;6:26-8. doi: 10.15171/jpd.2018.09.
2. Gomes LK, Custódio MR, Contieri FL, Riella MC, Nascimento MM. Persistent disorders of mineral

Received: 22 October 2017, Accepted: 18 November 2017 ePublished: 10 December 2017

¹Department of Internal Medicine, Section of Nephrology, Iran University of Medical Sciences, Tehran, Iran. ²Department of Internal Medicine, Section of Nephrology, Hamadan University of Medical Sciences, Hamadan, Iran.

*Corresponding author: Farhad Khoshjou, Email: fakhoshjou@yahoo.com

- metabolism after one year of kidney transplantation. *J Bras Neural*. 2016;38:282-7. doi: 10.5935/0101-2800.20160044.
3. Prakobsuk S, Sirilak S, Vipattawat K, Taweeseedt PT, Sumethkul V, Kantachuvesiri S, et al. Hyperparathyroidism and increased fractional excretion of phosphate predict allograft loss in long-term kidney transplant recipients. *Clin Exp Nephrol*. 2016 Dec 16.
 4. Wolf M, Weir MR, Kopyt N, Mannon RB, Von Visger J, Deng H, et al. A Prospective cohort study of mineral metabolism after kidney transplantation. *Transplantation*. 2016;100:184-93. doi: 10.1097/TP.0000000000000823.
 5. Nakai K, Fujii H, Ishimura T, Fujisawa M, Nishi S. Incidence and risk factors of persistent hyperparathyroidism after kidney transplantation. *Transplant Proc*. 2017;49:53-56. doi: 10.1016/j.transproceed.2016.10.011.
 6. Nakamura M, Ishida H, Takiguchi S, Tanaka K, Marui Y. Pathologic Features of parathyroid glands associated with the pathogenesis of long-lasting persistent hyperparathyroidism after kidney transplantation in long-term dialysis patients. *Transplant Proc*. 2016;48:874-7. doi: 10.1016/j.transproceed.2015.12.108.
 7. Evenepoel P, Claes K, Viaene L, Bammens B, Meijers B, Naesens M, et al. Decreased circulating sclerosis levels in renal transplant recipients with persistent hyperparathyroidism. *Transplantation*. 2016;100:2188-93. doi: 10.1097/TP.0000000000001311.
 8. Pérez-Sáez MJ, Herrera S, Prieto-Alhambra D, Vilaplana L, Nogués X, Vera M et al. Bone density, microarchitecture, and material strength in chronic kidney disease patients at the time of kidney transplantation. *Osteoporos Int*. 2017. doi: 10.1007/s00198-017-4065-5.
 9. Welte T, Arnold F, Technau-Hafsi K, Neumann-Haefelin E, Wobser R, Zschiedrich S, et al. Successful management of calciphylaxis in a kidney transplant patient: case report. *Transplant Direct*. 2016;2(4):e70. doi: 10.1097/TXD.0000000000000582.
 10. Pihlström HK, Gatti F, Hammarström C, Eide IA, Kasprzycka M, Wang J, et al. Early introduction of oral paricalcitol in renal transplant recipients. An open-label randomized study. *Transpl Int*. 2017;30:827-40. doi: 10.1111/tri.12973.
 11. Donate-Correa J, Henríquez-Palop F, Martín-Núñez E, Pérez-Delgado N, Muros-de-Fuentes M, Mora-Fernández C, et al. Effect of paricalcitol on FGF-23 and klotho in kidney transplant recipients. *Transplantation*. 2016;100:2432-8.
 12. Cianciolo G, Galassi A, Capelli I, Angelini ML, La Manna G, Cozzolino M. Vitamin D in kidney transplant recipients: mechanisms and therapy. *Am J Nephrol*. 2016;43:397-407. doi: 10.1159/000446863.
 13. Dulfer RR, Franssen GJH, Hesselink DA, Hoorn EJ, van Eijck CHJ, van Ginhoven TM. Systematic review of surgical and medical treatment for tertiary hyperparathyroidism. *Br J Surg*. 2017;104:804-813. doi: 10.1002/bjs.10554.
 14. Niel O, Maisin A, Macher MA, Peuchmaur M, Deschênes G. Cinacalcet in hyperparathyroidism management after pediatric renal transplantation. *CEN Case Rep*. 2016;5:141-143. doi: 10.1007/s13730-015-0211-0.
 15. Mawad H, Bouchard H, Tran D, Ouimet D, Lafrance JP, Bell RZ et al. Retrospective study looking at cinacalcet in the management of hyperparathyroidism after kidney transplantation. *J Transplant*. 2017;2017:8720283. doi: 10.1155/2017/8720283
 16. Ważna-Jabłońska E, Gałązka Z, Durlik M. Treatment of persistent hypercalcemia and hyperparathyroidism with cinacalcet after successful kidney transplantation. *Transplant Proc*. 2016;48:1623-5. doi: 10.1016/j.transproceed.2016.01.044.
 17. Cheunsuchon B, Sritippayawan S. Successful treatment of early allograft dysfunction with cinacalcet in a patient with nephrocalcinosis caused by severe hyperparathyroidism: a case report. *BMC Res Notes*. 2017;10:153. doi: 10.1186/s13104-017-2477-0.
 18. Al-Moasseb Z, Aitken E. Natural history of serum calcium and parathyroid hormone following renal transplantation. *Transplant Proc*. 2016;48:3285-3291. doi: 10.1016/j.transproceed.2016.09.050.
 19. Meng C, Martins P, Frazão J, Pestana M. Parathyroidectomy in persistent post-transplantation hyperparathyroidism - single-center experience. *Transplant Proc*. 2017;49:795-798. doi: 10.1016/j.transproceed.2017.01.067.
 20. Soliman AR, Maamoun HA, Soliman MA, Darwish H, Elbanna E, Cinacalcet versus parathyroidectomy in the treatment of secondary hyperparathyroidism post renal transplantation. *Rom J Intern Med*. 2016;54:184-9. doi: 10.1515/rjim-2016-0027.
 21. Wada Y, Iyoda M, Iseri K, Arai-Nunota N, Saito T, Hamada T. Combination therapy of denosumab and calcitriol for a renal transplant recipient with severe bone loss due to therapy-resistant hyperparathyroidism. *Tohoku J Exp Med*. 2016;238:205-12. doi: 10.1620/tjem.238.205.

Please cite this paper as: Dadras F, Khoshjou F. Hyperparathyroidism after renal transplantation. *J Parathyroid Dis*. 2018;6(2):76-77. doi: 10.15171/jpd.2018.24.

Copyright © 2018 The Author(s); Published by Nickan Research Institute. This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.