

Juxtaglomerular Cell Tumour: Case Report and Literature Review

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Abstract

Juxtaglomerular tumor cells kidney (reninoma) is an uncommon, mostly benign tumor, characterized by excess secretion of renin, causing a secondary hypertension. The tumor rather seldom meets. In 50 years from the moment of its first description a little more than 100 similar tumors are described in literature. The uncontrollable hypertension leads to endotelial damage and to complications on heart, kidneys and the central nervous system which can be life-threatening. Reception of hypotensive preparations leads to temporary effect. The hypertension is treated by tumor resection or nephrektomy.

Clinical case of the women of 29 years old with a juxtaglomerular tumor with the clinical picture of high blood pressure to 160–180 mm Hg within 10 years are presented. Possibilities of ultrasonography (B-mode, duplex scanning, contrast enhancement) at detection of this tumor and the importance of anamnestic data in the differential diagnosis of kidney tumors are shown.

Key words: Juxtaglomerular Cells Tumor, Reninoma, Clinic, Diagnostics, Treatment.

References

1. Kidney tumors. Morphological diagnostics and genetics. The management for doctors / Ed. Yu. Yu. Andreyeva and G. A. Frank. Moscow: RMAPO, 2011. 66 p. (in Russian).
2. Practical guidance on ultrasonic diagnostics. General ultrasonic diagnostics / Prod. the 2nd., ed. V. V. Mitkov. Moscow: Vidar, 2011. 720 p. (in Russian).
3. *Agrawal R., Zafar S., Jafri H. et al.* Juxtaglomerular cell tumor: MR findings. *J. Comput. Assist. Tomogr.* 1995. V. 19. No. 1. P. 140–142.
4. *Beaudoin J., Perigny M., Tetu B., Lebel M.* A patient with a juxtaglomerular cell tumor with histological vascular invasion. *Nat. Clin. Pract. Nephrol.* 2008. V. 4. No. 8. P. 458–462.
5. *Chen W. S., Chang J. W.* Extrarenal juxtaglomerular cell tumor in bone. *Chin. Med. J.* 1987. V. 100. No. 1. P. 78–82.
6. *Choi J.-H., Park T.-H., Kim M.-H. et al.* A rare cause of secondary hypertension in a young adult. *Korean. Circ. J.* 2015. Nov. V. 45. No. 6. P. 531–534.
7. *Conn J. W., Cohen E. L., McDonald W. D. et al.* The syndrome of hypertension, hyperreninemia and secondary aldosteronism associated with renal juxtaglomerular cell tumor (primary reninism). *J. Urol.* 1973. V. 109. P. 349.
8. *Diker-Cohen T., Abraham S. B., Rauschecker M. et al.* Reninoma presen-

- ting in pregnancy. *J. Clin. Endocrinol. Metab.* 2014. Aug. V. 99. No. 8. P. 2625–2626.
9. *Dong D., Li H., Yan W., Xu W.* Juxtaglomerular cell tumor of the kidney – a new classification scheme. *Urol. Oncol.* 2010. V. 28. P. 34–38.
 10. *Duan X., Bruneval P., Hammadeh R. et al.* Metastatic juxtaglomerular cell tumor in a 52-year-old man. *Am. J. Surg. Pathol.* 2004. V. 28. P. 1098–1102.
 11. *Gherardi G. J., Arya S., Hickler R. B.* Juxtaglomerular body tumor: A rare occult but curable cause of lethal hypertension. *Hum. Pathol.* 1974. V. 5. No. 2. P. 236–240.
 12. *Gil N.-S., Han J.Y., Ok S.-H. et al.* Anesthetic management for percutaneous computed tomography-guided radiofrequency ablation of reninoma: a case report. *Korean J. Anesthesiol.* 2015 Feb. V. 68. No. 1. P. 78–82.
 13. *Gottardo F., Cesari M., Morra A. et al.* A kidney in an adolescent with severe hypertension and hypokalemia: an uncommon case-report and review of the literature on reninoma. *Urol. Int.* 2010. V. 85. No.1. P. 121–124.
 14. *Gu W.J., Zhang L. X., Jin N. et al.* Rare and curable renin-mediated hypertension: a series of six cases and a literature review. *J. Pediatr. Endocrinol. Metab.* 2015 Oct 23. URL: pii: /j/jpem.ahead-of-print/jpem-2015-0025/jpem-2015-0025.xml. [Epub ahead of print].
 15. *Haab F., Dulcos J. M., Guyenne T. et al.* Renin-secreting tumors: diagnosis, conservative surgical approach and long-term results. *J. Urol.* 1995. V. 153. No. 6. P. 1781–1784.
 16. *Hanna W., Tepperman B., Logan A.G. et al.* Juxtaglomerular cell tumour (reninoma) with paroxysmal hypertension. *CMA Journal.* 1979. 21 Apr. V. 120. P. 957–959.
 17. *Helenon O., Correas J.-M.* Ultrasound and doppler in kidney cancer. Chapter in book: *Guerhazi A. Imaging of Kidney Cancer.* Berlin; Heidelberg: Springer-Verlag, 2006. P. 15–28.
 18. *Henderson N. L., Mason R. C.* Juxtaglomerular cell tumor in pregnancy. *Obstet. Gynecol.* 2001. V. 98. P. 943–945.
 19. *Katabathina V. S., Vikram R., Nagar A. M. et al.* Mesenchymal neoplasms of the kidney in adults: imaging spectrum with radiologic-pathologic correlation. *Radiographics.* 2010. V. 30. No. 6. P. 1525–1540.
 20. *Kihara I., Kitamura S., Hoshino T. et al.* A hitherto unreported vascular tumor of the kidney: a proposal of «juxtaglomerular cell tumor». *Acta. Path. Jap.* 1968. V. 18. No. 2. P. 197–206.
 21. *Kim H.-J., Kim C.H., Choi Y.-J. et al.* Juxtaglomerular cell tumor of kidney with CD34 and CD117 immunoreactivity. Report of 5 cases. *Arch. Pathol. Lab. Med.* 2006. V. 130. No. 5. P. 707–711.
 22. *Kodet R., Taylor M., Vachalova H., Pycha K.* Juxtaglomerular cell tumor: An immunohistochemical, electron-microscopic, and in situ hybridization study. *Am. J. Surg. Pathol.* 1994. V. 18. No. 8. P. 837–842.
 23. *Kuroda N., Gotoda H., Ohe C. et al.* Review of juxtaglomerular cell tumor with focus on pathological aspect. *Diagn. Pathol.* 2011. V. 6. P. 80.
 24. *Lachvac L., Svajdler M., Valansky L. et al.* Juxtaglomerular cell tumor, causing fetal demise. *Int. Urol. Nephrol.* 2011. V. 43. P. 365–370.
 25. *Leemingsawat C., Thongtang N.* Malignant hypertension due to a large reninoma: a case report. *J. Med. Assoc. Thai.* 2012. Feb. V. 95. No. 2. P. S251–255.
 26. *Li X., Liang P., Guo M. et al.* Real-time Contrast-enhanced Ultrasound in Diagnosis of solid renal lesions. *Discov. Med.* 2013. Aug. V. 16. No. 86. P. 15025.

27. *Libório A. B., Marques F. O., Testagrossa L. et al.* Malignant hypertension with intestinal ischemia secondary to juxtaglomerular cell tumor. *Am. J. Kidney Dis.* 2005. V. 46. P. 957–961.
28. *Martin S. A., Mynderse L. A., Lager D. J., et al.* Juxtaglomerular cell tumor: a clinicopathologic study of four cases and review of the literature. *Am. J. Clin. Pathol.* 2001. V. 116. P. 854–863.
29. *McVicar M., Carman C., Chandra M. et al.* Hypertension secondary to renin-secreting juxtaglomerular cell tumor: case report and review of 38 cases. *Pediatr. Nephrol.* 1993. V. 7. No. 4. P. 404–412.
30. *Merte U. K., Niranjan J., Kusum J. et al.* Reninoma treated with nephron-sparing surgery. *Urol.* 2003. V. 61. No. 6. P. 1259–1260.
31. *Mimran A., Leckie B. J., Fourcade J. C. et al.* Blood pressure, renin-angiotensin system and urinary kallikrein in a case of juxtaglomerular cell tumor. *Am. J. Med.* 1978. V. 65. P. 527–536.
32. *Robertson P. W., Klidjian A., Harding L. K. et al.* Hypertension due to a renin-secreting renal tumour. *Am. J. Med.* 1967. V. 43. P. 963.
33. *Rubenstein J. N., Eggener S. E., Pins M. R. et al.* Juxtaglomerular apparatus tumor: a rare, surgically correctable cause of hypertension. *Rev. Urol.* 2002. V. 4. No. 4. P. 192–195.
34. *Schambelan M., Howes E. L. J., Stockigt J. R. et al.* Role of renin and aldosterone in hypertension due to a renin-secreting tumor. *Am. J. Med.* 1973. V. 55. P. 86.
35. *Squires J. P., Ulbright T. M., De Schryver-Kecsckemeti K., Engleman W.* Juxtaglomerular cell tumor of the kidney. *Cancer.* 1984. V. 53. No. 3. P. 516–523.
36. *Tanabe A., Naruse M., Ogawa T. et al.* Dynamic computer tomography is useful in the differential diagnosis of juxtaglomerular cell tumor and renal cell carcinoma. *Hypertens. Res.* 2001. V. 24. No. 4. P. 331–336.
37. *Tetu B., Vaillancourt L., Camilleri J.-P. et al.* Juxtaglomerular cell tumor of the kidney: report of two cases with a papillary pattern. *Hum. Pathol.* 1993. V. 24. No. 11. P. 168–174.
38. *Torricelli F. C. M., Marchini G. S., Junior J. R. C. et al.* Nephron-sparing surgery for treatment of reninoma: a rare renin secreting tumor causing secondary hypertension. *Int. Braz. J. Urol.* 2015. Jan-Feb. V. 41. No. 1. P. 172–176.
39. *Trnka P., Orellana L., Walsh M. et al.* Reninoma: an uncommon cause of renin-mediated hypertension. *Front. Pediatr.* 2014. V. 2. P. 89.
40. *Venkateswaran R., Hamide A., Dorairajan L. N., Basu D.* Reninoma: a rare cause of curable hypertension. *BMJ Case Rep.* 2013. May 15; 2013. URL: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3669796/> (дата обращения: 3.02.2016).
41. *Vidal-Petiot E., Bens M., Choudat L. et al.* A case report of reninoma: radiological and pathological features of the tumour and characterization of tumour-derived juxtaglomerular cells in culture. *J. Hypertens.* 2015. Aug. V. 33. No. 8. P. 1709–1715.
42. *Watanabe M., Sugi M., Murota T. et al.* Retroperitoneoscopic nephrectomy for juxtaglomerular cell tumor. *Int. J. Urol.* 2002. V. 9. №12. P. 704–706.
43. *Wolley M., Gordon R. D., Stowasser M.* Reninoma: the importance of renal vein renin ratios for Lateralisation and Diagnosis. *Am. J. Nephrol.* 2014. V. 39. P. 16–19.
44. *Wong L., Hsu T. H., Perlroth M. G. et al.* Reninoma: case report and literature review. *J. Hypertens.* 2008. V. 26. P. 368–373.

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