Clinical Case Reports International

Case Report
Published: 07 Oct, 2022

Intestinal Type Metaplasia in Renal Pelvis

Rosa Maria Rios-Pelegrina, Javier L Lopez-Hidalgo, Javier Urrutia and Alexandra J Remon*

San Cecilio Hospital, Knowledge Avenue S/N, Granada, Spain

Abstract

Metaplastic changes from urothelium to intestinal type epithelium in the renal pelvis are rare and have the potential of undergoing a malignant transformation to adenocarcinoma. We report a case of intestinal metaplasia in pyelocaliceal and urothelial systems associated to squamous metaplasia without residual urothelium, in a 73-year-old female patient's right kidney, associated with pyelocaliceal lithiasis, and without malignant transformation. The patient underwent a nephroureterectomy. The metaplastic epithelium's immunohistochemistry shows positivity to cytokeratin 20, low Ki-67 index, and a lack of expression of p53. In this case, terminal renal illness with the aforementioned metaplastic changes didn't evolve towards adenocarcinoma, which indicates that intestinal metaplasia doesn't always imply malignant transformation.

Introduction

Chronic injury of several etiologies can induce metaplastic changes from urothelium to intestinal type epithelium in the renal pelvis, as are seen in bladder urothelium [1-4]. These changes are rare and have the potential of undergoing a malignant transformation to adenocarcinoma.

Case Presentation

A 73-year-old female with bilateral renal pain and hyperuricemia. In a simple Rx it can be seen multiple coral stones in right kidney, including pelvis and mayor calyx. A right nephroureterectomy is performed.

The kidney surface looked nodular and multiple calculi are observed, some coralliform, occupying the chalices and the renal pelvis. Microscopically, the renal parenchyma was atrophic, with signs of chronic pyelonephritis (Figure 1). Pyelocalyceal system showed an extensive intestinal type metaplasia (Figure 2) without remaining urothelial epithelium. In the ureter, in addition, foci of squamous metaplasia are observed. Intestinal metaplasia is constituted by goblet cells with large intracytoplasmic vacuoles with a mucinous PAS positive content (Figure 2). The metaplastic epithelium's immunohistochemistry shows positivity to cytokeratin 20, weak cytokeratin 7, low Ki-67 index, and lack of p53 expression.

Discussion

Metaplasia is rarely seen in superior urinary tract. Squamous change is the most common metaplastic finding and is hardly ever [5-8], associated to intestinal metaplasia. Intestinal metaplasia without malignant transformations is also in usual, many of reported cases had some type of harmful agent as chronic infection and stones [1,9-14]. There are only 24 previously reported intestinal metaplasia without associated neoplasm. The average age was 51 years old and is more frequently in men (2.6/1). Nine cases were stone associated, the others have hydronephrosis and/or chronic infectious diseases.

Intestinal and squamous metaplasias have been considered secondary to a variety of irritative stimuli. In 1950 was already identified the transformation in goblet cells of the pelvic epithelium into experimental chronic pyelonephritis [15], and in 1951 Jakob and Mau [16] showed that vitamin A deficiency could lead to leukoplakia. Cystitis, urethritis and cystic and glandular pyelitis are frequently associated with chronic inflammation, and in the bladder, these lesions may be reversible [16-19]. In this context it is interesting to comment that it has been described that the bladder epithelium in bladder exstrophy is normal at birth, and that glandular metaplasia develops almost invariably following inflammatory and mechanical irritations, and that the progression to adenocarcinoma has been described [20]. Mechanical factors can also be associated with squamous and glandular metaplasia in the renal pelvis and ureter. Of the cases reviewed in the literature, all showed evidence of chronic infection, and lithiasis associated with lithiasis in 9 of them. Therefore, the long-term effects of chronic irritative stimuli are probably associated with urothelial metaplasia

OPEN ACCESS

Correspondence:
Rosa Maria Rios-Pelegrina, San Cecilio Hospital, Knowledge Avenue S/N, Granada, Spain, Tel: +34639391836; E-mail: rosa.rios.pelegrina@gmail.com

Received Date: *19 Sep 2022*
Accepted Date: *04 Oct 2022*
Published Date: *07 Oct 2022*

Citation:
Rios-Pelegrina RM, Lopez-Hidalgo JL, Urrutia J, Remon AJ. Intestinal Type Metaplasia in Renal Pelvis. Clin Case Rep Int. 2022; 6: 1407.

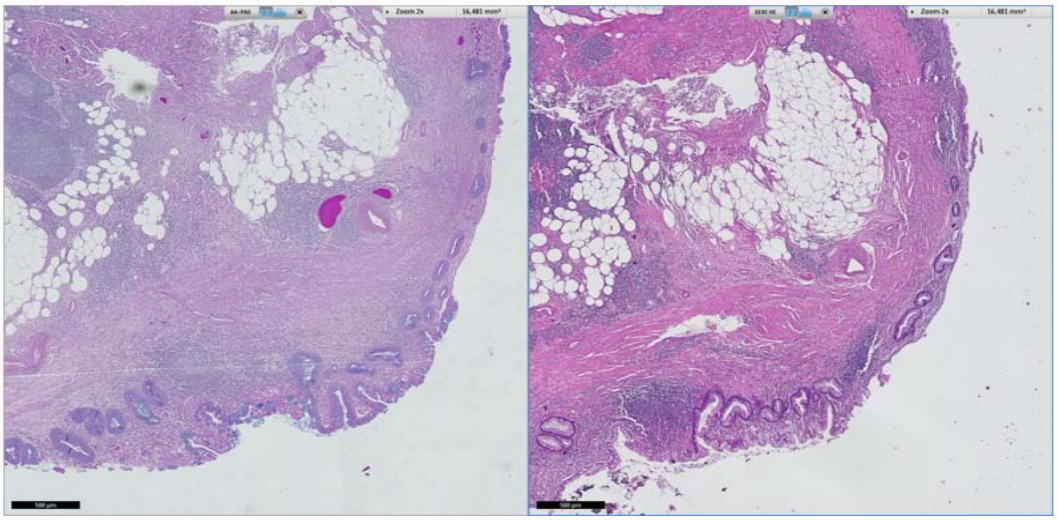

Figure 1: The renal parenchyma was atrophic, with signs of chronic pyelonephritis.

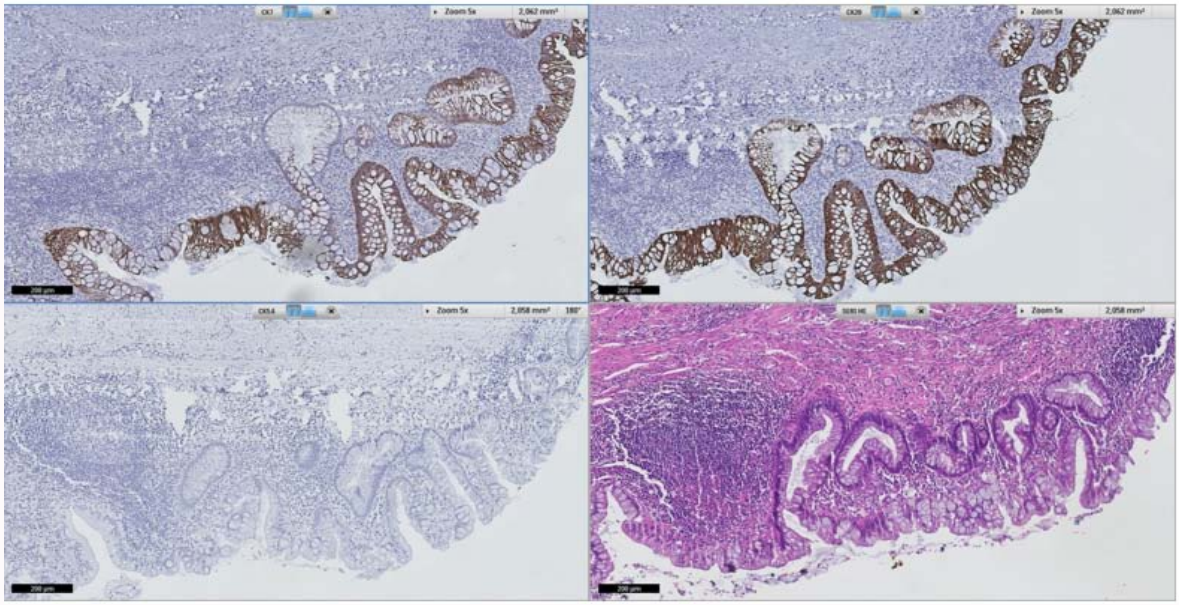

Figure 2: Pyelocalyceal system showed an extensive intestinal type metaplasia.

of the renal pelvis.

The presence of adenocarcinoma in combination with intestinal metaplasia has been frequently observed, but it is not clear what the mechanism of this association is. Some authors postulate that the metaplasia could be an unstable change and its evolution to neoplasia would be the result of a loss of cell cycle regulation [12,14]. The determination of p53 in these cases could guide the probability of future development of tumors in patients presenting with this type of metaplasia, being especially useful in small biopsies, since it could condition the clinical management of the patients [21-29].

We report a case of intestinal metaplasia in pyelocaliceal and urothelial systems associated to ureteral squamous metaplasia without residual urothelium in a patient with terminal renal illness with the aforementioned metaplastic changes didn't evolve towards adenocarcinoma, which indicates that intestinal metaplasia doesn't always imply malignant transformation.

References

1. Spires SE, Banks ER, Cibull ML, Munch L, Delworth M, Alexander NJ. Adenocarcinoma of renal pelvis. Arch Pathol Lab Med.1993;117(11):1156-60.
2. Sagnotta A, Dente M, Socciarelli F, Cacchi C, Stoppacciaro A, Balducci G. Primary adenocarcinoma of the renal pelvis: Histologic features of a stepwise process from intestinal hyperplasia to dysplasia in a patient with chronic renal abscess. Int J Surg Pathol. 2014;22(2):182-5.
3. Tsuzuki T, Kouketsu H, Ono K, Kobayashi H, Obata K. Primary adenocarcinoma of the renal pelvis with special reference to histochemical observations. Pathol Int. 1996;46(10):791.
4. Toyoda H, Mabuchi T, Fukuda K. Mucinous cystadenoma with malignant transformation arising in the renal pelvis. Pathol Int. 1997;47(2-3):174-8.
5. Gordon A. Intestinal metaplasia of the urinary tract epithelium. J Pathol 1963;85:441-4.
6. Ward AM. Glandular neoplasia within the urinary tract. The aetiology

of adenocarcinoma of the urothelium with a review of the literature I Introduction: The origin of glandular epithelium in the renal pelvis, ureter and bladder. Virchows Arch A Pathol Pathol Anat. 1971;352(4):296-311.

7. Krag DO, Alcott DL. Glandular metaplasia of the renal pelvis: Report of a case. Am J Clin Pathol. 1957;27(6):672-80.
8. Blacklock AR, Geddes JR, Black JW. Mucinous and squamous metaplasia of the renal pelvis. J Urol. 1983;130(3):544-5.
9. Salm R. Combined intestinal and squamous metaplasia of the renal pelvis. J clin Path.1969;22(2):187-91.
10. Bullock PS, Thoni DE, Murphy WM. The significance of colonic mucosa (intestinal metaplasia) involving the urinary tract. Cancer. 1987;59(12):2086-90.
11. Pal DK, Das S. Mucinous (intestinal) metaplasia of renal pelvic epithelium due to PUJ obstruction. Indian J Urol. 2000;17(1):55-7.
12. Deniz K, Kala M, Kaya R. Intestinal metaplasia of the renal pelvis. Urol J. 2010;7(4):287-9.
13. Zhou W, Zhong K, Wang J, Gu Y, Huang L, Jiang Z, et al. Intestinal metaplasia of the renal pelvis: A case report and literature review. Oncol Lett. 2014;8(6):2664-8.
14. Shukla P, Gulwani HV. Extensive intestinal metaplasia of renal pelvis: Report of a case and literature review. Indian J Pathol Microbiol. 2015;58(4):483-6.
15. De Navasquez S. Experimental pyelonephritis in the rabbit produced by staphylococcal infection. J Pathol Bacteriol. 1950;62:429-36.
16. Jacob Nh, Mau W. Metaplasia of ureteral epithelium resulting in intestinal mucosa and adenocarcinomatous transformation; report of two cases. J Urol. 1951;65(1):20-4.
17. Kittredge We, Brannan W. Cystitis glandularis. J Urol. 1959;81:419-30.
18. Grieve J. Contrasting cases of cystitis cystica. Br J Urol. 1965;37:157-9.
19. Goyanna R, Emmett JL, McDonald JR. Exstrophy of the bladder complicated by adenocarcinoma. J Urol. 1951;65(3):391-400.
20. Foot NC. Glandular metaplasia of the epithelium of the urinary tract. South Med J. 1944;37:137-42.
21. Torassa GL. Pyelitis glandularis. J Urol. 1948;60(3):393-7.
22. Maclean JT, Fowler VB. Pathology of tumors of the renal pelvis and ureter. J Urol. 1956;75(3):384-415.
23. Towers RP. Aspects of metaplasia in genito-urinary pathology. J Ir Med Assoc. 1963;53:179-83.
24. Lam KY, Choi CH. Massive enlargement of the kidney in glandular metaplasia of the renal pelvis. Nephron. 1995;69(1):91-2.
25. Mathur S, Singh MK, Rao SI, Seth A. Mucinous metaplasia of the renal pelvic epithelium in a case of recurrent urolithiasis and pyelonephritis. Urol Int. 2004;72(4):355-7.
26. Plaut A. Diffuse membranous bulic adenoma of the renal pelvis with tumor-like proliferation of vascular muscles. Z Urol Chir. 1929;26:562.
27. Brutt H. Uber pyelitis glandularis. Z Urol Chir. 1923;14:157.
28. Paschkis. Contributions to the pathology of the renal pelvis. Folia Urol. 1912;7:55.
29. Siderits RH, Fingerman J, Hazra A, Rimmer C, Colaco M, Mikhail N, et al. Renal pelviceal keratinizing squamous metaplasia with sparing of pyramidal zones. Case Rep Urol. 2012;2012:242780.