



## CYTODIAGNOSIS OF MUCINOUS CYSTADENOCARCINOMA OF RENAL PELVIS - A RARE CASE REPORT.

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### ABSTRACT

Primary mucinous adenocarcinoma of renal pelvis is a rare cystic neoplasm which mimics a hydronephrosis or pyonephrosis radiologically. We are presenting here a case report where mucinous cystadenocarcinoma of pelvicalyceal system was mimicking clinically and radiologically as pyonephrosis but diagnosed preoperatively through a simple and rapid test, Ultrasound- guided fine-needle aspiration cytology. Cytology smears revealed signet ring like malignant epithelial cells in a mucinous background. A cytological diagnosis of mucinous adenocarcinoma of renal pelvis was suggested. It is essential to diagnose mucinous cystadenocarcinoma preoperatively through cytology to decide the appropriate surgical plan. Radical nephrectomy with partial ureterectomy was done. Grossly the entire kidney was converted into thick walled cyst measuring 20 × 16 cm containing thick mucinous material. Histopathological examination confirmed the cytological diagnosis. The post operative period was uneventful and one year follow up showed no recurrence. Thus a timely cytological diagnosis made preoperatively saved the patients life.

**KEY WORDS:** Mucinous cystadenocarcinoma, Renal pelvis, Rare tumor, FNAC, Cytodiagnosis.



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## INTRODUCTION

Primary mucinous cystadenocarcinoma of renal pelvis is a rare malignant epithelial tumor. It is a high grade tumor with a propensity for rapid dissemination. Since a cystic neoplasm, it is often misdiagnosed as hydronephrosis and pyonephrosis clinically<sup>1</sup>. We are reporting a case of mucinous adenocarcinoma of renal pelvis which is diagnosed preoperatively by a simple, rapid and safe USG guided fine needle aspiration cytology test. We present this case because cytology literature on mucinous carcinoma of renal pelvis is so

sparse. The case report is as described below.

## CASE REPORT

A 45 year old male presented with a month history of abdominal discomfort and abdominal pain. On palpation a lump was felt in the left loin. No history of oliguria, hematuria or mucusuria. CT scan showed a large cystic mass of size 20 × 16 cm involving the left kidney [Figure 1].

Figure 1: Contrast CT scan

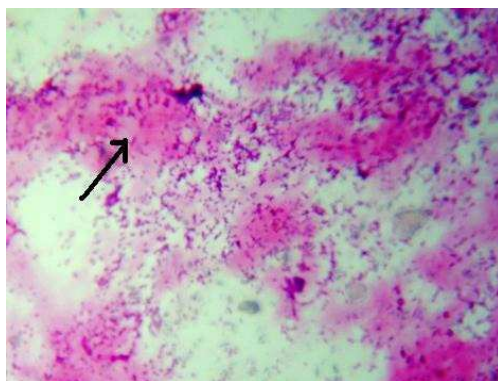


**Figure 1**

*Contrast CT scan shows a solid and cystic mass (arrow) measuring 20 × 16 cm involving the left kidney.*

All the other basic investigations were within normal limits. Clinically a differential diagnosis of hydronephrosis and pyonephrosis was given. Later he was subjected to USG guided FNAC. Solid areas

of the tumor was sampled. Cytology smears revealed groups of malignant epithelial cells and few signet ring cells in a mucinous background [Figure 2 & Figure 3]. Figure 2 & 3: Cytology slides



**Figure 2**

**Cytology smear shows the mucin and scattered malignant cells (H and E stain, ×400).**

**Figure 3**



**Figure 3**

**Cytology smear shows groups of malignant epithelial cells and signet ring like cells (arrow) in a mucinous background (H and E stain, ×400).**

Correlating the cytological features with the clinical and radiological findings, we were able to give a definitive diagnosis of mucinous adenocarcinoma of renal pelvis. He underwent a radical nephrectomy with a

partial resection of the ureter. Grossly, the entire kidney is converted into a thick walled cyst with shaggy inner surface containing thick mucinous fluid [Figure 4].

**Figure 4**

**Gross appearance of the specimen**

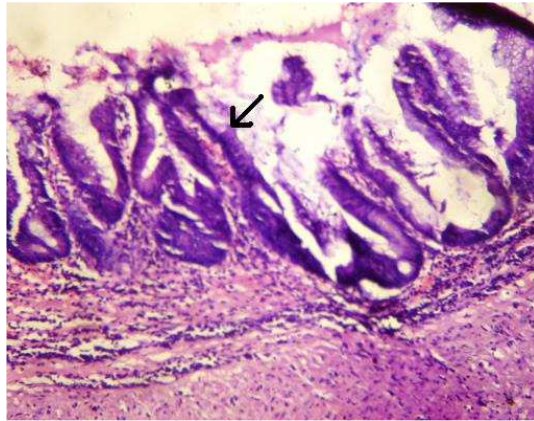


**Figure 4**

**Grossly the entire kidney is converted in to a thick walled cyst with shaggy inner surface (arrow).**

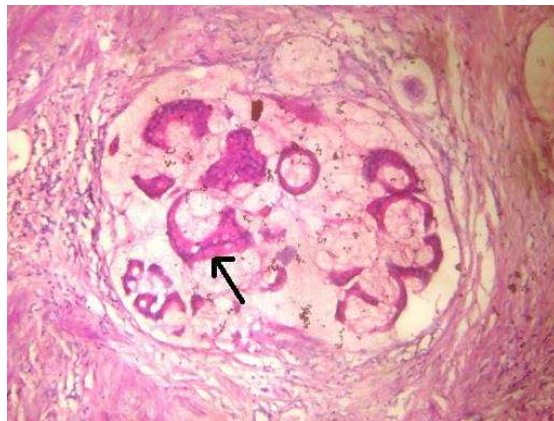
Histopathological examination showed a malignant neoplasm with cells arranged in glandular and papillary pattern, invading the stroma and blood vessels [Figure 5]. Some foci showed signet ring like cells floating in pools of mucin. Periodic acid Schiff stain

stained the mucin strongly [Figure 6]. Transitional epithelium of renal pelvis showed glandular metaplasia and dysplastic changes [Figure 7]. Figure 5, 6 & 7 : Histopathology Slides



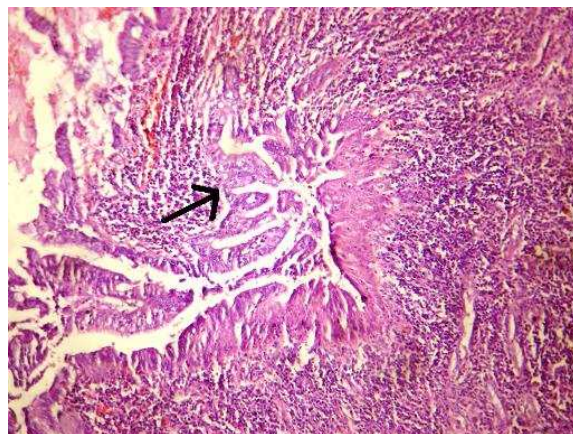
**Figure 5**

*Photomicrograph shows papillary projections lined by malignant mucinous cells (arrow) (H and E stain, × 400).*



**Figure 6**

*Photomicrograph shows groups of signet ring cells floating in pools of mucin stained by PAS stain (PAS stain, × 400)*



**Figure 7**

*Photomicrograph shows dysplastic changes (arrow) in the transitional epithelium of the renal pelvis surrounded by chronic inflammatory cells (H and E stain, ×400).*

Thus histopathological features also confirmed the cytological diagnosis of mucinous cystadenocarcinoma of renal pelvis. The post operative period was uneventful. One year of follow up till now showed no recurrence.

## DISCUSSION

Primary mucinous cystadenocarcinoma of renal pelvis is a rare malignant tumor constituting <1% of renal malignancies<sup>2</sup>. The tumors of pelvicalyceal system are Transitional cell carcinoma (90%), Squamous cell carcinoma (10%) and Adenocarcinoma (1%). Many cases of mucinous cystadenocarcinoma of renal pelvis are reported from Asian countries especially from India<sup>3,4</sup>. It commonly occurs in the older people. Adeno carcinoma of renal pelvis are usually subdivided into four types namely tubulovillous, papillary, signet ring and mucinous adenocarcinoma<sup>4</sup>. Mucinous cystadenocarcinoma arise from the metaplastic glandular transformation of the urothelium due to chronic infections and irritation by large renal calculi<sup>5</sup>. Other etiologic factors are chronic smoking, analgesic abuse and use of dyes. Most patients are asymptomatic but can present with abdominal mass, flank pain, hematuria, mucusuria and dysuria<sup>6,7,8</sup>. Rarely it can manifest with pseudomyxoma peritonei and peritoneal deposits<sup>9</sup>. Preoperative diagnosis of mucinous adenocarcinoma is essential to decide the line of management. The imaging studies are often inconclusive in mucinous cystic neoplasms hence we have to resort to other modes of diagnosis. One of which is USG guided FNAC. It is a recently developed, rapid, minimally invasive safe technique that gives successful results. The cytology literature on mucinous adenocarcinoma is very

sparse. In our case we aspirated thick mucinous fluid from the tumor and then the solid areas were sampled. Cytological findings have been described in the case report and shown in the figures 2 and 3. We were able to give a definitive diagnosis preoperatively through cytology by correlating with the clinical and radiological features. Primary tumor from other sites should also be ruled out before diagnosing primary mucinous adenocarcinoma of renal pelvis<sup>10</sup>. In our case complete systemic examination looking for primary tumor at other sites did not reveal any abnormalities. Most adeno carcinomas are of high grade and widely invasive at the time of presentation. The tumour has a poor prognosis and a high recurrence rate<sup>11</sup>. Radical nephrectomy with total resection of ureter is the treatment of choice. Close follow up is necessary to look for recurrence. Carcino embryonic antigen (CEA) levels can be used for assessing the prognosis and recurrence rate<sup>12</sup>.

## CONCLUSION

Primary mucinous adenocarcinoma of renal pelvis is a high grade malignant cystic neoplasm often misdiagnosed clinically as pyonephrosis and hydronephrosis due to insignificant radiological features. But definitive preoperative diagnosis is possible through USG guided FNAC. Cytological diagnosis in time will guide the surgeons to plan an appropriate surgery thereby increasing the survival rate.

## ABBREVIATIONS

FNAC – Fine Needle Aspiration Cytology,  
PAS – Periodic Acid Schiff reagent stain  
USG – Ultrasonogram, CEA –  
Carcinoembryonic antigen.

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