

# Mucin-Secreting Adenocarcinoma of Kidney: A rare Histological Presentation

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## Abstract

A mucus producing adenomatous tumor, adenocarcinoma of the renal pelvis has been one of the rarest tumors of the genito-urinary tract. Presented here is a case report of a patient who was admitted with pain and lump left loin and was operated upon. The gross morphology and histological features of the specimen were consistent with mucin-secreting adeno-carcinoma of the kidney.

## Key words

Mucin-secreting adenocarcinoma, Renal calculi, Chronic irritation, Renal pelvis.

## Introduction

Mucin-secreting adeno-carcinoma of the renal pelvis has been one of the rarest tumors of the genito-urinary tract (1). In 1965, Suzuki and Siminovitch reviewed eight previously reported primary mucus secreting tumors of the renal pelvis and added one case of their own (2). Thirty-two additional cases have been reported so far according to the English literature (3). The rarity of this tumor justifies reporting the case.

## Case Report

Fifty year old male presented with a swelling in left lumbar region with pain of 5 months duration. On general physical examination, patient was markedly anaemic and emaciated. Local examination revealed a mass in the left lumbar region extending to left hypochondrium, crossing the midline in the umbilical region, lower limit extending to left iliac fossa.

Sonography revealed a grossly hydronephrotic left kidney with branched calculus in the pelvis, and presence of debris which was reported as pus and hence a diagnosis of pyonephrosis with staghorn calculus was made.

Intravenous pyelography showed non-functioning left kidney even after delayed films along with a staghorn calculus.

The patient was prepared for an urgent nephrectomy. Per operation, kidney was approached after giving incision over 12th rib. It was very bulky and unmanageable for dissection from surrounding structures. In order to decompress the kidney an incision was made over the thinned out parenchyma of the kidney. The surgeon was surprised to see approximately 2 litres of thick dirty looking mucus and blood. There was a large staghorn calculus in the pelvis of the kidney. After

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removal of the calculus a fleshy growth was observed in the pelvis. Nephroureterectomy was done and the specimen was sent for histopathological examination. There was no tumor in the gut or surrounding structures except for large para-aortic lymphnodes.

Pathology of the nephrectomy specimen, revealed a huge distorted specimen of kidney weighing 530 grams and measuring 20×15×8 cms. Outer surface was irregular and nodular, and covered by moderate amount of adipose tissue. The specimen was partially open on the hilar area from where mucus was seen to be oozing out, making the specimen slimy.

Cut section revealed complete distortion of the kidney architecture. the corticomedullary junction was not identified. Almost whole of the kidney was replaced by a mucinous and slimy growth, containing large pools of mucin. There were multiple large and small cystic areas filled with the mucin, haemorrhage and necrosis.



Fig. 1 : Cut section of the specimen depicting tumour with large mucinous areas.

Fifteen blocks of the surgical specimen were prepared and serial sections of the blocks were made. Slides were stained with H&E, PAS and Mucicarmine stains. All sections revealed complete effacement of the kidney by neoplastic tissue, which were made up of well formed glands, nests and islands of malignant cells in the pools of mucin. The individual cells were small

cuboidal to low columnar, with eccentrically placed hyperchromatic nuclei. Most of the cells had intracytoplasmic vacuoles of variable size, some cells were of signet ring type, similar to those found in large gut tumors. Several areas depicted marked chronic inflammation. Large areas of haemorrhage and necrosis were seen. The mitotic index was high.

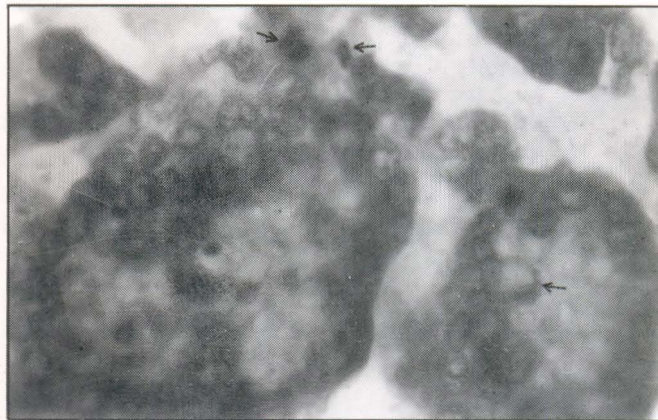


Fig. 3 : High power view showing tumour cells in large pools of mucin (400x).



Fig. 2 : Low power view showing signet ring cells and mitotic activity (100x).

A diagnosis of mucin-secreting adenocarcinoma probably of renal pelvic origin was made on gross and histological findings.

### Discussion

Mucus secreting adenocarcinoma is a rare tumor of the renal pelvis. All these cases occurred during the 4th

to 8th decade, the youngest being 38 years and the oldest being 87 years (1). Our patient was 50 years of age. There is some female sex preponderance with a female: male ratio of 3 : 1. In our case the patient is a male. Most of the females have the tumor in the right kidney, while most of the male patients have the tumor in the left kidney (1). Our patient also has tumor in the left kidney. The prognosis appears to be relatively poor.

The transitional epithelium of the urinary tract has a potentiality for metaplasia, usually to stratified squamous epithelium, and occasionally to glandular or enteric type epithelium (4). These phenomena are usually associated with long standing chronic inflammation and calculi. In most of the reported cases of mucinous adeno-carcinoma of the renal pelvis, the involved kidney had history of renal calculi (1). In our case, patient had staghorn calculus in the intra-renal pelvis.

Different theories regarding the mechanisms involved in the metaplasia of the transitional lining epithelium in the development of adenocarcinoma of renal pelvis have been reviewed. The glandular metaplasia and superimposed adenomatous tumour and adenocarcinoma are probably secondary to chronic inflammatory changes and mechanical irritation of calculi. A possible sequence of changes from transitional epithelium through successive stages of pyelitis granulosa, pyelitis-cystica, pyelitis-glandularis have been suggested by Regin and Rolnik (5) and supported by several other authors. Kennedy and Fidler (6) agreed that adeno-carcinoma within the urothelium arises by means of metaplasia, but they believe that columnar cell metaplasia may occur directly from transitional epithelial cells. Arcadi hypothesised that the mucinous adeno-carcinoma may arise first with gelatinous material of the tumor resulting in obstruction and formation of a stone (7). This theory has been opposed by Suzuki and Siminovitch (2).

The most constant findings in all reported cases is the presence of chronic pyelonephritis with or without hydronephrosis and calculi and appear to play a major role in producing mucinous adenocarcinoma of the renal pelvis (1).

Mucinous adenocarcinoma of the renal pelvis has a tendency to involve broad areas of pelvic and calyceal surface, assuming, a flat contour-conforming physical structure, which may prevent its recognition in diagnostic procedure. Even at the time of operation, the surgeon may not recognize the presence of the tumor on gross examination of the specimen, particularly since it may be partly obscured by an infective process. Because of the obvious advantage of knowledge of the nature of the disease at the time of operation, it might be advisable to perform routine frozen section examination of the renal pelvic mucosa of kidneys with calculi or severe infection (especially in those with recognizable mucus) even if no tumor is obvious. Recognition of this possibility and of the potentially subtle gross appearance of this tumor could alert both the surgeon and the pathologist when they are dealing with kidneys containing calculi (3).

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