

## CLINICAL CASE

# Serous cystadenoma of the epididymis of common epithelial ovarian type: Case report with an immunohistochemical study

Th. Klimis<sup>1</sup>, P. Vlahos<sup>2</sup>, N. Kokotas<sup>2</sup>

<sup>1</sup>Department of Pathology and <sup>2</sup>Department of Urology, 3rd Hospital of Social Security Foundation, Athens, Greece

## Summary

We report the clinical, morphological and immunohistochemical findings of a case with non-papillary serous cystadenoma of the epididymis. The tumor was a unilocular cyst with a thin fibrous capsule, lined by cuboidal or columnar epithelium containing ciliated cells, mostly arranged in a single layer. Immunohistochemically, the tumor cells were positive for cytokeratin (CK) AE1/AE3 and epithelial membrane antigen (EMA), strongly positive for CK7, progesterone receptor (PR), estrogen receptor (ER), androgen

receptor (AR), vimentin, CA-125 and S-100 protein. The cells did not stain for CK20 and CD10. Morphological and immunohistochemical features suggested a müllerian differentiation, possibly originated from vestigial remnants of the Müller duct.

This tumor is one of the rare benign lesions which should be considered in the differential diagnosis of a swelling in the epididymal region.

**Key words:** epididymis, immunohistochemistry, morphology, serous cystadenoma

## Introduction

Cystadenoma of the epididymis is an extremely rare benign neoplasm [1]. It is thought to be derived from Müllerian remnants or from mesothelium expressing facultative Müllerian differentiation [2].

The first case of papillary cystadenoma of the epididymis was reported by Sherrick in 1956 [3]. In 1964, Easton and Claridge demonstrated ciliated cells in papillary cystadenomas [4]. Price [5] published a series of 20 cases with a clinicopathological analysis and drew attention to the association of bilateral disease with Lindau's syndrome. All of them were cystic lesions with papillary formations. In 1986, Young and

Scully reported 11 cases from the literature and added 3 personal observations [6]. Few additional cases have been reported since then [2,7-11]. Most of them were serous or mucinous cystadenomas of benign or borderline malignancy [1,2,6,12].

In most reported cases, these lesions had been situated within or were closely associated to the head of the epididymis [7,9-11], but lesions with identical features have been described in the spermatic cord [12] or within the testis [2,13,14].

The tumor appears as a cystic mass up to several centimeters in diameter with papillary proliferations. Only one previous report of pure (non papillary) cystadenoma of the epididymis was found during a literature search [7].

We present another case of serous cystadenoma (non papillary) of the epididymis with morphological and immunohistochemical findings.

## Clinical presentation

An 83-year-old married man presented with asymptomatic enlargement of the right testis since 2 years.

Received 23-03-2006; Accepted 15-04-2006

Author and address for correspondence:

Thanasis Klimis, MD  
43, Kononos Street  
Pagrati  
116 34 Athens  
Greece  
Tel: +30 210 3426900

His general health was good. On clinical examination he had a firm, smooth swelling, replacing the upper part of the testis. The cord was normal as was the opposite testis. There was no other abnormal physical signs. Ultrasound examination of the scrotum revealed a cystic lesion in relation to the epididymis. The suspected clinical diagnosis was a spermatocele. On surgery, the cyst and the adjacent portion of the epididymis were surgically removed. The convalescence was uneventful.

The resected specimen was fixed in 10% formalin and processed for histological examination by standard methods. The sections were deparaffinized and stained with hematoxylin-eosin (H&E) and periodic acid Schiff (PAS), both with and without prior diastase digestion.

Immunohistochemistry was performed using standard avidin-biotin complex (ABC) techniques and a large number of antibodies: CK AE1/AE3, CK7, CK20, ER, PR, AR, EMA, CD10, S-100 protein, CA-125 and vimentin.

Immunohistochemistry was carried out using appropriate positive and negative controls.

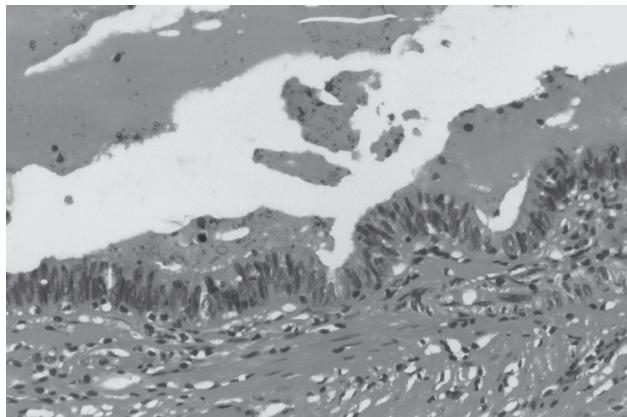
#### *Pathological findings*

The lesion consisted of a thick-walled cyst 5 cm in greater dimensions, embedded in the substance of the head of the epididymis. On cut section, the cyst appeared unilocular and contained viscous yellow-tan fluid (Figure 1). The inner surface was completely smooth.

On histological examination the tissue surrounding the cyst was found to be composed of dense fibrous tissue, containing small foci of lipogranulomatous inflammation with histiocytes and foreign body type giant cells. The cyst wall was lined by tall columnar rather than cuboidal cells many of which had cilia with centrally placed, round, dark nucleus (Figure 2). Within the epithelium were scattered rare lymphocytes.

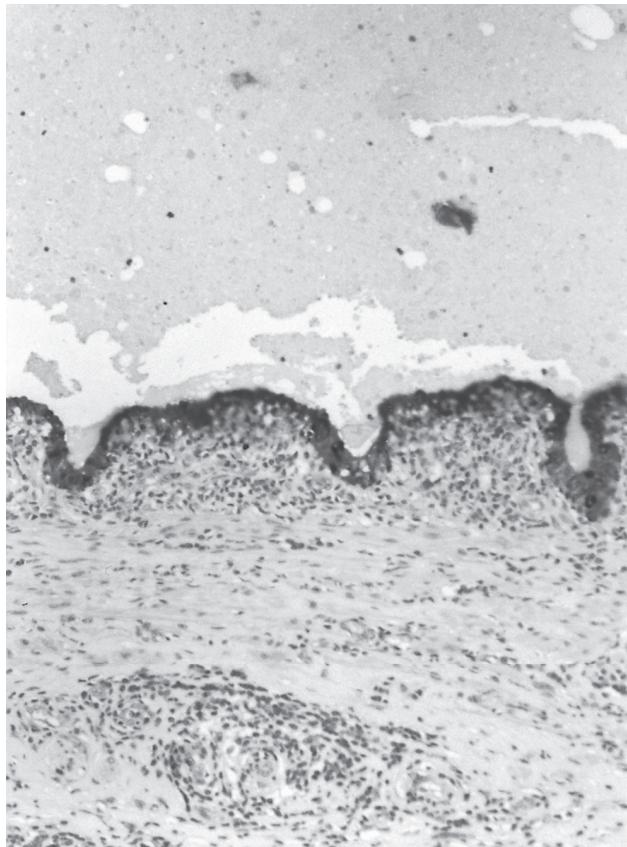


**Figure 1.** Bisected specimen of the cystic tumor of the epididymis.

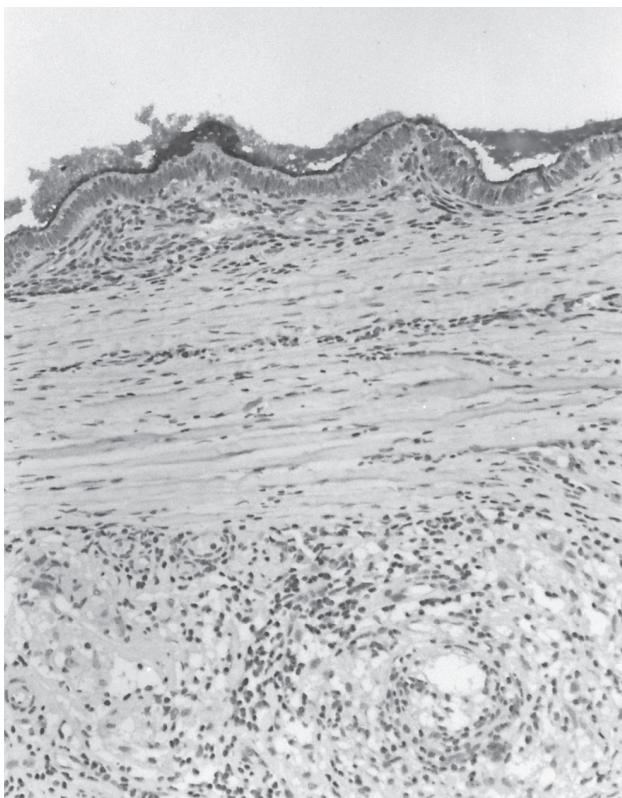


**Figure 2.** The inner surface of the cyst lined by ciliated columnar cells exhibiting cellular stratification (H&E  $\times 125$ ).

Cells were arranged in a single layer although focal cellular stratification was noted in 2 or 3 layers. Nuclear pleomorphism or mitotic activity was not found. The cystic cavity contained amorphous, eosinophilic material which stained positively with diastase PAS. Spermatozoa were not identified. The surrounding epididymis was normal and some tubules contained spermatozoa.



**Figure 3.** Strong cytokeratin-7 immunopositivity is present in all cystadenoma cells (ABC immunoperoxidase  $\times 125$ ).



**Figure 4.** Immunohistochemistry for CA 125 showing strong positive luminal surface membrane staining (ABC immunoperoxidase  $\times 125$ ).

#### Immunohistochemistry

The columnar and cuboidal cells of the cystic lesion were strongly positive for CK7 (Figure 3). However, CK7 was expressed only by the basal, but not by the cylindrical ciliated cells of the epididymis. S-100 protein and vimentin were expressed by the epithelial cells of the cyst wall, but not by the cells of the epididymis ducts. The cyst-lining cells were also positive for CK AE1/AE3, EMA and CA-125 (Figure 4), ER, PR and focal AR. The cells of the epididymis ducts were ER and PR negative, whereas AR were positive.

Cystic epithelium was CD10-negative, while epididymis ducts were CD10-positive.

Based on the findings of pathologic examination and immunohistochemistry the present tumor may be classified as serous cystadenoma of the epididymis, ovarian type.

#### Discussion

Epididymal serous cystadenoma is a rare cause of non-testicular intrascrotal swelling [9] which runs

an indolent clinical course. In a review of the literature of epididymal papillary cystadenomas the most consistent finding was an asymptomatic mass that had been present for a number of years [5].

Grossly, the tumors were encapsulated or well-circumscribed and about 50% were multicystic [9]. Our case was a unilocular cyst without intracystic complex papillary growth, which measured up to 5 cm in diameter. The morphologic features and the immunophenotype were identical to those of ovarian serous cystadenomas. The cystic wall was lined by columnar ciliated cells with rare scattered lymphocytes within the thickness of the epithelium. The presence of epithelial cells bearing cilia seems to be characteristic for serous cystadenomas and borderline tumors of the ovary [1,15]. Axiotis [2] interprets the presence of ciliated cells in a testicular tumor as evidence in favor of Müllerian origin.

Other lesions were considered in the differential diagnosis, chief among these a benign cystic lesion of Wolffian duct origin and spermatocele.

However, in our case there was co-expression of cytokeratins and vimentin, as in human fetal Müller duct [16], coexpression of ER and AR, as in human appendix testis [17] and lack of CD10 expression. Like in serous tumors of the ovary, there was also immunohistochemical staining of cyst-lining cells for CA-125, CK7, ER and PR, providing evidence for müllerian differentiation [6,18]. Positive staining with CA-125 has not been described in Wolffian duct derived structures. Also CD10 has not been reported to be present in Wolffian-type epithelium [19].

Another lesion which may enter into the differential diagnosis of serous cystadenoma of the epididymis includes spermatocele which represents a cystic dilatation of efferent ducts filled with masses of sperm. In our case cystic fluid did not contain spermatozoa. The cystic wall was lined by tall or cuboidal epithelium with cilia. However, the immunohistochemical panel was different from that of the epididymis duct. The epithelial cells stained strongly with cytokeratins, whereas the CK7 was expressed by the basal and not by the columnar ciliated cells of the epididymis. Cystic epithelium also co-expressed S-100 protein and vimentin and was CD10-negative, while the epididymis ducts were S-100 and vimentin-negative and CD10-positive.

The origin of Müllerian epithelial tumors in a testicular or paratesticular location is unclear. It is suggested that these tumors arise from epithelial cells of Müllerian duct remnants, such as the appendix testis or Müllerian remnants along the testiculoePIDIDYmAL groove [2,17].

An alternative explanation is that these lesions may arise from the mesothelial lining of the tunica vaginalis of the testis or the mesothelial lining of the spermatic cord. The mesothelium retains the ability to differentiate towards different cell types when it undergoes neoplastic transformation.

## References

1. McClure RF, Keeney GL, Sebo TJ et al. Serous borderline tumors of the paratestis: a report of seven cases. Am J Surg Pathol 2001; 25: 373-378.
2. Axiotis CA. Intratesticular serous papillary cystadenoma of low malignant potential. An ultrastructural and immunohistochemical study suggesting mullerian differentiation. Am J Surg Pathol 1988; 12: 56-53.
3. Sherrick JC. Papillary cystadenoma of the epididymis. Cancer 1956; 9: 403-407.
4. Easton JA, Claridge M. Cystadenoma of the epididymis. Br J Urol 1964; 36: 416-417.
5. Price EB. Papillary cystadenoma of the epididymis. A clinicopathological analysis of 20 cases. Arch Pathol 1971; 91: 456-470.
6. Young RH, Scully RE. Testicular and paratesticular tumors and tumor-like lesions of ovarian common epithelial and mullerian types. A report of four cases and review of the literature. Am J Clin Pathol 1986; 86:146-152.
7. Pich A, Galliano D. Pure (non-papillary) serous cystadenoma of the epididymis: A histologic and immunohistochemical study. Path Res Pract 2005; 201: 65-69.
8. Greka AR, Morley AR, Evans D. Papillary cystadenoma of the epididymis. Br J Urol 1985; 57: 356-357.
9. Aydin H, Young RH, Brigitte MR, Epstein JI. Clear cell papillary cystadenoma of the epididymis and mesosalpinx. Am J Surg Pathol 2005; 29: 520-523.
10. Calder CJ, Gregory J. Papillary cystadenoma of the epididymis: A report of two cases with an immunohistochemical study. Histopathology 1993; 23: 89-91.
11. Billesbolle P, Nielsen K. Papillary cystadenoma of the epididymis. J Urol 1988; 139: 1062.
12. McCluggage WB, Shah V, Nott C et al. Cystadenoma of spermatic cord resembling ovarian serous epithelial tumors of low malignant potential: Immunohistochemical study suggesting Mullerian differentiation. Histopathology 1996; 28: 77-80.
13. Herschman BR, Ross MM. Papillary cystadenoma within the testis. Am J Clin Pathol 1979; 61: 724-729.
14. Tejada-Romero JC, Arjona-Fernandez M, Sancha-Gomez F et al. Intratesticular serous papillary cystadenoma. Br J Urol 1998; 82: 606-607.
15. Gondos B. Electron microscopic study of papillary serous tumors of the ovary. Cancer 1971; 27: 1455-1464.
16. Magro G, Grasso S. Expression of cytokeratins, vimentin and basement membrane components in human fetal mullerian duct and perimullerian mesenchyme. Acta Histochem 1995; 97: 13-18.
17. Samnakay N, Cohen J, Orford PA et al. Androgen and estrogen receptor status of the human appendix testis. Pediatr Surg Int 2003; 19: 520-524.
18. Carano KS, Soslow RA. Immunophenotypic analysis of ovarian and testicular mullerian papillary serous tumors. Mod Pathol 1997; 10: 414-420.
19. Cerilli LA, Sotelo-Avila C, Mills SE. Glandular inclusions of inguinal hernia sacs: morphologic and IHC distinction from epididymis and vas deferens. Am J Surg Pathol 2003; 27: 469-476.