Cilia, the organs of motility, are normally observed in many cell types including those of respiratory system, fallopian tubes, gastrointestinal tract, and inner ear. They have also been demonstrated in benign lesions such as intestinal metaplasia of pyloric mucosa, endosalpingiosis, ciliated cysts, and tumors of müllerian origin. Among the ovarian tumors, cilia have been well-documented on cytologic examination in cells of both benign and borderline neoplasms. Only a few papers have documented the presence of ciliated tumor cells in ovarian adenocarcinoma. We report such a rare case with well-formed cilia on tumor cells giving them a “sea anemone-like” appearance. These ciliated cells are an interesting finding and are a visual treat to the eyes of the cytopathologist as well.

Ascitic fluid of a 30-year-old female was received in the department of Pathology. The patient had a history of childbirth 18 months back, and now had complaints of abdominal distension, anorexia, and weight loss since 6 months. On examination, she was found to have bilateral adnexal masses with ascitis. Her cancer antigen 125 (CA-125) was increased (>5000 kU/L) while the rest of the tumor markers [lactate dehydrogenase (LDH), beta-human chorionic gonadotropin (β-HCG), alpha-fetoproteins (α-fetoproteins)] were within normal limits. A provisional clinical diagnosis of ovarian malignancy was kept.

Cytological examination of the ascitic fluid showed predominantly scattered and few clusters of tumor cells [Figure 1]. Tumor cells were round-to-oval, with eccentric nucleus, moderate nuclear pleomorphism, vesicular nuclei, and vacuolated cytoplasm at places. The tumor cells showed characteristic unipolar cilia in approximately 45-50% of the cells and resembled sea anemones floating in a sea of ascitic fluid [Figure 2]. The cilia were better seen on May-Grünwald Giemsa (MGG)-stained smears and in loosely cohesive or scattered tumor cells. The cilia were multiple, long, slender, showed uniform periodicity, and were eosinophilic in color. Basal body or terminal plate was not identified. No
psammoma bodies were noted. Based on nuclear features of malignancy, a diagnosis of adenocarcinomatous deposits was given on ascitic fluid cytology.

Subsequently, the patient underwent ultrasound-guided fine needle aspiration (US-FNA) from bilateral adnexal masses. The smears were cellular and showed sheets, clusters, cell balls, and papillae of tumor cells showing moderate nuclear anaplasia. Occasional tumor cells showed the presence of cilia on their cytoplasmic membranes. Areas of calcification, necrosis, and few psammoma bodies were noted in a myxoid background. A diagnosis of serous papillary adenocarcinoma was given on FNA cytology. Debulking chemotherapy was planned for the patient who, however, was lost to follow-up.

In this case, both on ascitic fluid cytology and FNA cytology, the diagnosis of malignancy was given based on the nuclear features. Presence of cilia on the tumor cells was noted as an additional interesting finding. Cilia were better seen in ascitic fluid on loosely cohesive and scattered tumor cells. This may be related to increased freedom of movement of the individual tumor cells in free fluid.\cite{3,6} On FNA smears, the characteristic appearance of cilia was masked, probably due to background mucoid material and necrosis.

Cilia have traditionally been considered as a hallmark of benignity.\cite{3} However, distinction between benign and malignant cells on light microscopy is possible only on the basis of nuclear features, and not on mere presence or absence of cilia. One study has postulated cilia in malignant cells to be extreme forms of microvilli that are different from true cilia seen in the benign exfoliated cells.\cite{6} The exact classification of these as cilia or microvilli is of importance in the pathogenesis and diagnosis of tumors. But this requires advanced systems such as electron microscope that are not available at every center.

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**Conflicts of interest**

There are no conflicts of interest.

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