

**FINE-NEEDLE ASPIRATION IN DIAGNOSIS OF METASTATIC ENDOMETRIOID  
ADENOCARCINOMA TO THE THYROID GLAND: A RARE ENTITY****<sup>1</sup>Sumiti Gupta MD, <sup>2</sup>\*Renuka Verma MD, <sup>3</sup>Rajnish Kalra MD and <sup>4</sup>Rajeev Sen MD**<sup>1</sup>Professor, <sup>2</sup>Assistant Professor, <sup>3</sup>Professor, <sup>4</sup>Senior Professor and Head,  
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**ABSTRACT**

Tumor metastasis to the thyroid gland is uncommon, most of these cases are discovered during an autopsy. But the number of cases seems to have increased in recent years may be related to more frequent use of fine-needle aspiration in any suspected case. In both clinical and autopsy series, renal cell, breast and lung carcinomas are the most frequent sources of metastases. They usually occur when there are metastases elsewhere, sometimes many years after the diagnosis of the original primary tumor and show poor prognosis in general. Clinical presentation with a palpable thyroid or functional disturbances in thyroid is uncommon. Metastasis of uterine cancer to the head and neck is extremely rare. Here we present a case of isolated metastasis of endometrioid adenocarcinoma to the thyroid gland diagnosed on FNAC in a 75-year-old woman presented with rapidly increasing swelling in thyroid region.

**KEYWORDS:** Metastasis, thyroid gland, adenocarcinoma, endometrioid, fine-needle aspiration.**INTRODUCTION**

The Thyroid gland usually is considered to be an infrequent site of metastatic involvement from primary carcinoma of other organs. This seems odd in view of the fact that the thyroid is one of the most richly arterialized tissue in the body. Generally, the primary tumor is found in the kidneys, gastrointestinal system (like the esophagus, stomach or colon), bronchi, or breast.<sup>[1,2]</sup>

Commonly, metastases to the thyroid gland are identified upon autopsy and value varies from 1.25% in unselected autopsy series to 24.2% in autopsy of patients with widespread malignant neoplasms.<sup>[3]</sup> Very few studies mention metastatic disease in clinical material, where it is estimated at 2–3% of all malignant tumors diagnosed in the thyroid. Endometrioid adenocarcinoma is a fairly common uterine malignancy with an incidence of 24.4 cases per 100,000 in the United States.<sup>[4]</sup> To the best of our knowledge till now only few cases of metastasis of endometrioid adenocarcinoma to the thyroid gland has been reported in the literature. Here we discuss clinical presentation, cytological diagnosis of thyroid alongwith histological confirmation on hysterectomy specimen and treatment with radiation therapy.

**Case Presentation:** A previously fit 75-year-old housewife presented to the outpatient clinic with swelling in front and left side of neck rapidly increasing in size since 10-12 days and deviating trachea to other side. Patient had mild stidor, dysphagia and dysphonia.

There was no history of significant weight loss. On examination, the neck swelling was firm to hard, moved on deglutition and measured 5 cm × 3 cm. The thyroid hormone profile was within normal range. Ultrasonography revealed large heteroechoic mass with altered echotexture. A contrast-enhanced CT scan showed a 5cm complex mass in thyroid region extending to retrosternal area. The mass was displacing the airway to the left. No cervical adenopathy was seen. Breast examination, mammography and chest X-ray were unremarkable. Clinically, diagnosis of primary thyroid malignancy was made possibly anaplastic carcinoma due to rapid growth.

FNA done from thyroid swelling using the palpation method with a 22-gauge, 4.5-cm long needle without using the handle. Two passes from different sites were taken. Direct smears were air-dried for MGG staining. The smears were cellular with neoplastic cells arranged in small clusters, groups, sheets and dispersed singly having large round to oval pleomorphic nuclei, prominent nucleoli, focal crowding, reticulogranular nuclear chromatin and moderate amount of pale basophilic cytoplasm vacuolated at places (figure 1). Mitotic figures and bi-multinucleated cells also seen. The background showed benign follicular epithelial cells, bare nuclei, colloid and RBCs (figure 2).

Cytologic diagnosis was positive for malignancy with metastases from a poorly differentiated adenocarcinoma.

Subsequent to this patient was called again and underwent usg of abdomen including uterus and bilateral adnexa which showed a growth in the endometrial cavity. CA-125 levels were found to be increased. Endometrial biopsy was done and patient was diagnosed with endometrioid adenocarcinoma. Later she underwent a total abdominal hysterectomy and bilateral salpingo-oophorectomy, which confirmed a FIGO grade II endometrioid adenocarcinoma (figure 3).

Hence, cytologic diagnosis of metastatic deposits of endometrioid adenocarcinoma to the thyroid gland was made and the patient was subsequently treated with high-dose radiation therapy.

### Legends

Figure 1: FNA smear from thyroid revealing cluster of malignant cells having large round to oval pleomorphic nuclei and moderate amount of pale basophilic cytoplasm (MGG 400x).

Figure 2: FNA smears revealing admixture of normal follicular epithelial cells and malignant cells (MGG 40x).

Figure 3: FNA smears revealing admixture of thick colloid and malignant cells (MGG 200x).

Figure 4: Grade II endometrioid adenocarcinoma (paraffin section H & E 200x).

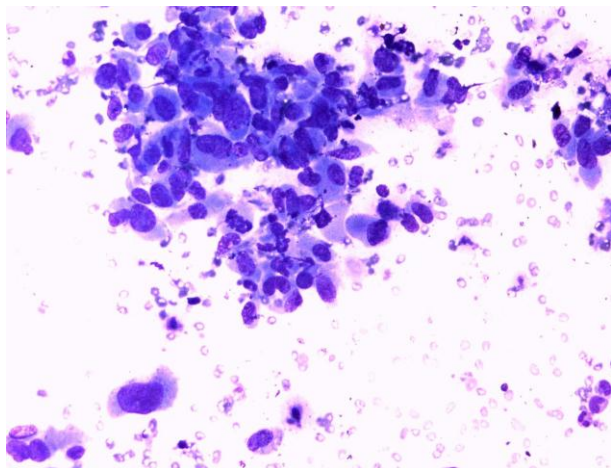


Figure 1.

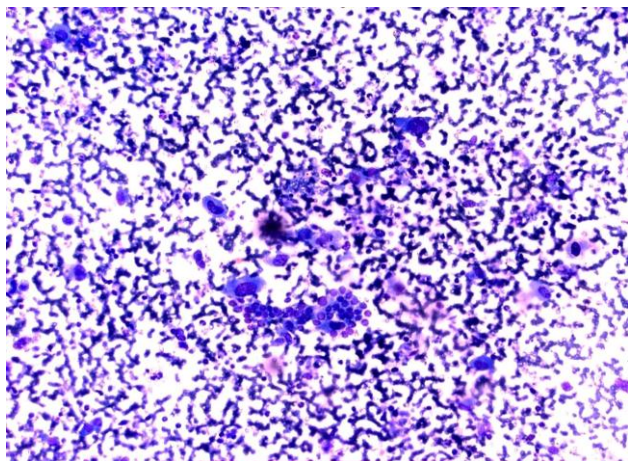


Figure 2.

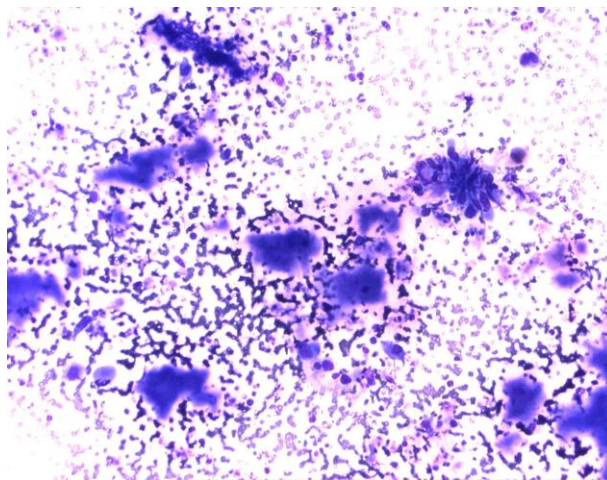


Figure 3.

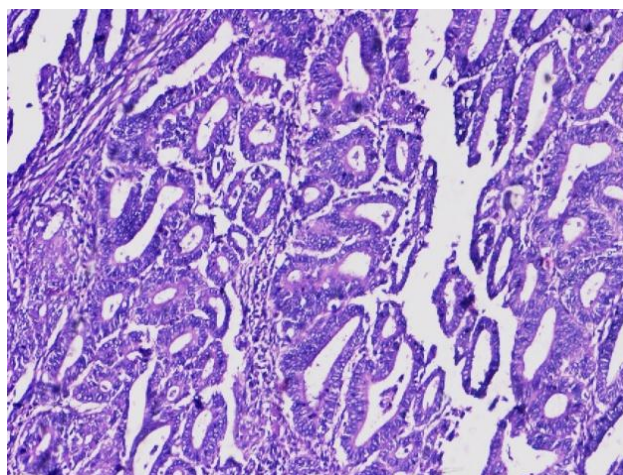


Figure 4.

### DISCUSSION

Metastasis to the thyroid gland is rare, most of these cases are discovered during an autopsy. Aspiration biopsy using a fine needle is now established in the investigation of primary thyroid disorders. Malignancies metastasizing to the thyroid account for 0.1% of all thyroid nodular lesions investigated by FNA.<sup>[5]</sup> Although FNA of the thyroid lesions is helpful in the thyroid metastasis nodules, Histopathological verification and immunohistochemical (IHC) examination are recommended for the final diagnosis.

The plausible reasons for rare metastatic deposits to the thyroid are abundant blood flow through the gland which hinders the seeding of tumor cells, high iodine content, and hyperoxic environment which inhibit the development of metastatic tumor cells.<sup>[6]</sup> The common primary tumor sites include kidney (33%), lung (16%), breast (16%), esophagus (9%), and uterus (7%).<sup>[1]</sup> Isolated case reports depicting a large variety of primary sites including pancreas, liver, bile duct, prostate, ovary, placenta, adrenal and parotid have been reported in the literature.<sup>[2]</sup> The patient may present with diffuse thyroid swelling or a nodule, dysphagia, dyspnea, dysphonia and cough.



The diagnosis provided by FNAC in majority of cases is straight forward as the cytomorphology of tumor cells is similar to that of the primary tumor of the thyroid. This suffices to carry out a thorough radiological work-up and search for the primary tumor site in metastatic cancers. The thyroid function tests are nonspecific and noncontributory. Some cytologic features immediately indicating towards secondary malignancy are the presence of keratin, mucin, melanin and bile. Information about the history of prior tumor elsewhere, an admixture of normal thyroid follicular cells with tumor cells and absence of papillary or follicular pattern in aspirates also point towards metastasis.<sup>[7]</sup> In the current case, the primary tumor in the endometrium was established after the FNA diagnosis of metastasis in thyroid which prompted the clinician to search for the primary site.

Metastasis of uterine cancer to the head and neck is extremely rare. Only few cases of endometrioid adenocarcinoma metastasizing to the thyroid gland as the first presentation of any regional or distant disease has been documented in the literature. Endometrioid adenocarcinoma normally spreads to the pelvic and paraaortic lymph nodes and ovaries. Most frequently, distant metastases have been reported to the lung, liver and bone. Rare case reports can be found in the literature of endometrioid carcinoma metastases to the head and neck region, including the soft tissues of the neck, paranasal sinuses, eye, brain, tongue, skin and maxilla.<sup>[8]</sup> A single case of an endometrial carcinosarcoma metastatic to the thyroid has also been reported.<sup>[9]</sup>

The differential diagnosis includes the columnar cell variant of papillary thyroid carcinoma (PTC), anaplastic thyroid carcinoma and metastasis. In our case neither dedifferentiated areas nor nuclear features of PTC were seen favoring metastasis over primary carcinoma. In case of metastatic thyroid tumor IHC staining for calcitonin, thyroglobulin and thyroid transcription factor 1 (TTF-1) is negative. On the contrary, CKMNF 116, cytokeratin 7 (CK7), carcinoembryonic antigen (CEA) and mammoglobin 2 are specific and sensitive markers and should be positive in metastatic breast carcinoma. In addition, estrogen, progesterone receptors as well as herceptin receptor (HER2) might be evaluated in metastatic breast cancer.<sup>[10]</sup> While thyroid carcinomas (all types) can be positive for CA-125 in upto 10% of cases, endometrioid carcinomas are positive in upto 91% of cases,<sup>[11]</sup> as in our case.

FNA could confirm a clinical suspicion of metastasis to the thyroid gland accurately with low morbidity, it also might help avoid unnecessary thyroidectomy in patients with a poor prognosis. Hence, thyroid metastatic deposits, merits serious consideration. Adequate surgical treatment may prove to be life prolonging or life saving.

## CONCLUSION

Endometrioid adenocarcinoma metastasizing to the thyroid gland is extremely uncommon. Secondary tumor spread to the thyroid commonly indicates widespread malignant disease and surgery to the thyroid may therefore be unnecessary. The differentiation between primary and secondary nature of the neoplasm has both therapeutic and prognostic bearing.

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