Colon cancer metastasis to the thyroid gland

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ABSTRACT

يعد انتشار سرطان القولون للغدة الدرقية حالة سريرية غير شائعة. نستعرض هنا حالة مريض ذكر سعودي يبلغ من العمر 40 عاماً مشخص مسبقاً بانتشار سرطان القولون، حيث تقدم إلينا في بادئ الأمر ببحة في الصوت. تم اكتشاف كتلة في النصف الأيسر من الغدة الدرقية وأكدت الخزعة بالإبرة الرفيعة تشخيص انتشار سرطان القولون إليها. مع مرور الوقت تدهورت حالة المريض إلى صعوبة في التنفس. تم عمل فتحة رغامية للتنفس وتم تأكيد التشخيص بأخذ عينة من الكتلة. من المطلوب أن نرفع اشتباه سرطان القولون والمستقيم كسبب في انتشار الغدة الدرقية.

Thyroid metastasis originating from colon cancer is an uncommon clinical entity. We present a case of a 40-year-old Saudi male patient that was known to have metastatic adenocarcinoma of the colon, and who presented initially with hoarseness of voice. A left thyroid lesion was found and fine-needle aspiration biopsy showed that it was a colon cancer metastasis. His condition later deteriorated with development of stridor. Tracheostomy was performed and the diagnosis was confirmed by biopsy. A high index of suspicion is required to consider colorectal carcinoma metastatic to the thyroid.

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Colorectal cancer (CRC) is ranked fourth among all cancers in the general Saudi population.[1] At presentation, 30-40% of all patients have metastatic disease as it has a high likelihood of metastasis.[1] The most frequent sites of metastasis are the regional lymph nodes, liver, lung, and peritoneum.[1] Colorectal cancer is rarely metastatic to the thyroid.[1-5] Metastasis occurs late in the course of CRC, but may be seen increasingly as more effective treatments result in longer survival.[4] Although clinically apparent metastases from non-thyroid malignancies (NTMs) to the thyroid gland are uncommon, they are no longer considered to be rare.[6] Of all patients who underwent surgery for thyroid malignancy, 1.4-3% were reported as metastatic from NTMs to the thyroid.[6] Renal cell carcinoma (RCC), lung carcinoma, CRC, and breast carcinoma are the most frequently reported NTMs metastasizing to the thyroid.[6] A prevalence of 1.9-24% was reported by previous autopsy studies.[3,6,7] As metastatic tumors do not clinically vary from primary thyroid cancers and other benign thyroid diseases, it is essential to consider this possibility in patients with a history of previous primary cancers in order to avoid misdiagnosis.[3] The objective of presenting this particular case is to highlight the likelihood of CRC that distantly metastasize to the thyroid gland.

Case Report. We report a 40-year-old Saudi male, known to have a locally advanced adenocarcinoma of the colon with multiple liver and lung metastases, status post Hartmann's procedure for local invasion one year prior to presentation. He failed his first line of chemotherapy (8 cycles of folinic acid [leucovorin]), fluorouracil [5-FU], and oxaliplatin [eloxatin] [Folfox]-Avastin). At the time of presentation, he was on the second line of chemotherapy (8 cycles of leucovorin, 5-FU, and irinotecan [Camptosar] [Folfiri]-Cetuximab) showing partial clinical remission of his known hepatic metastatic lesions. He was referred to the Otolaryngology-Head and Neck surgery clinic for evaluation of hoarseness of voice, difficulty swallowing, and recent onset of stridor. His neck examination showed a firm swelling over the thyroid region. A fiberoptic laryngoscopy was performed and showed bilateral vocal

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cord paresis with only a 2-3 mm glottic chink. A CT scan of the neck showed a soft tissue mass involving the thyroid gland with coarse calcifications and thyroid cartilage destruction with 2 tracheal rings involvement (**Figure 1**). A fine needle aspiration (FNA) of the mass was carried out and showed a cluster of malignant cells consistent with metastasis from a colorectal primary based on properly controlled immunohistochemical stains (**Figure 2**). Due to rapid obstruction of his airway, a tracheostomy was carried out followed by an open incisional biopsy (**Figure 3**). No radiation therapy was indicated or surgical resection for him; as he was already palliative. He was followed up for 10 months and continued to be in partial clinical remission and tracheostomy dependent.

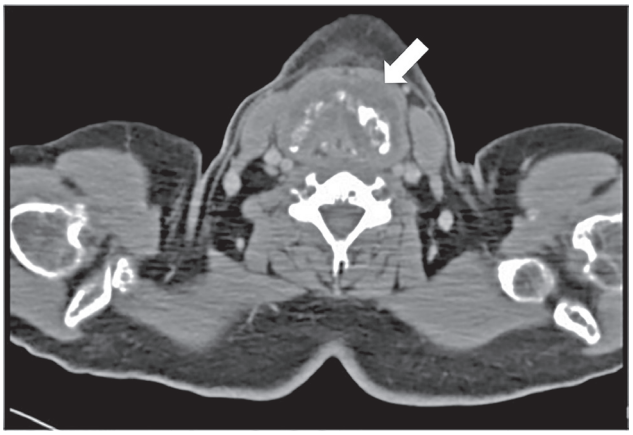

Figure 1 - Axial CT scan showing soft tissue mass involving the thyroid gland with coarse calcifications and thyroid cartilage destruction (arrow) with 2 tracheal rings involvement.

Discussion. Nearly all organs may be the origin of primary tumors metastasizing to the thyroid gland.[7] These include: kidney, melanoma, breast, lung, head and neck tumors, hematological malignancies, gastrointestinal tumors, genital tract tumors, and sarcomas.[5] The NTMs from a given primary tumor differ depending on ethnic/demographic and epidemiological variances.[7] It is rare for CRC to metastasize to the thyroid gland, as only a few reported cases in the literature, mainly pathology literature and a 4% incidence from autopsy data.[1,3,5] Trivedi et al[4] found only 32 reported cases of NTM that were clinically evident before death as being caused by metastatic CRC. The site of origin was the rectum and the ascending colon in most cases.[4] Philips et al[5] reviewed such cases and found that 80% of the published cases were female with an age distribution of 37-81 years.[5] Similarly, Trivedi et al[4] reported an

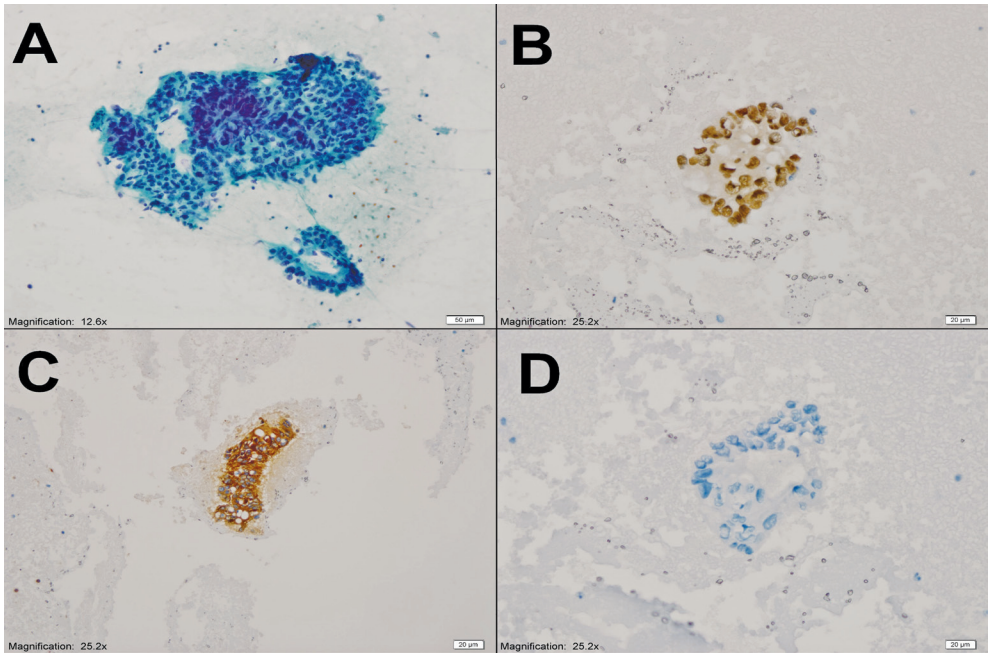

Figure 2 - Fine needle aspiration of the thyroid showing: **A)** Cluster of malignant cells, papanicolaou (Pap) stain, x12.6. **B)** CDX1 polyclonal antibody for immunohistochemistry stain (positive), x25.2. **C)** Carcinoembryonic antigen immunohistochemistry stain (positive), x25.2. **D)** Thyroid transcription factor-1 immunohistochemistry stain (negative), x25.2 consistent with colorectal adenocarcinoma.

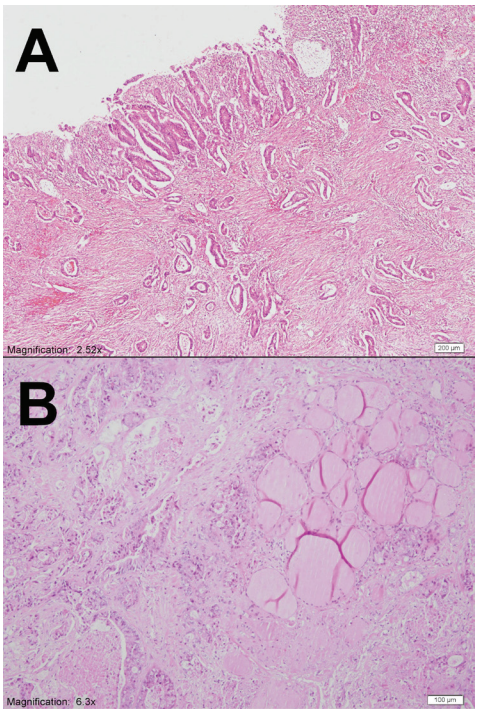

Figure 3 - Tissue biopsy **A**) Primary adenocarcinoma of the colon, magnifications x2.52. **B**) Metastatic tumor in the thyroid tissue. Hematoxylin and Eosin stain, magnifications x 6.3.

average age of 61.2 years, and a male to female ratio of 1:3.6. Chung et al[6] also noted a female predominance of 1.4:1, and a mean age of presentation of 59 years in NTM metastasizing to the thyroid. However, a report from Italy[7] showed no gender predominance for NTM; although most were diagnosed in elderly patients, with a median age of 66 years. Patients with NTM initially presented in 74.9% of cases with a neck mass and dysphagia; while 25.1% are incidentally noted on physical examination or imaging studies.[6] The clinical course of individuals with NTM depends on the dissemination and advanced stage of the primary tumor rather than its spread to the thyroid.[6,7] Kim et al[8] suggests that in any patient with a known history of previous carcinoma, the appearance of a new thyroid mass should be regarded as potentially metastatic. Fine needle aspiration with cytological evaluation reliably diagnoses secondary malignancies; particularly metastatic adenocarcinoma.[2] Chung et al[6] reported a sensitivity of 73.7% for preoperative FNA yielding the accurate diagnosis of NTM. The most common NTMs for which the FNA results were falsely negative were esophageal tumors (50%), cervical tumors (33%), RCC (28.5%), and malignant melanoma (20%). While the accurate diagnoses provided were for breast carcinoma (94.7%), lung carcinoma (90.1%), CRC (88.5%), and sarcomas (87.5%).[6] Criteria that may provide a clue to the distant origin are a history of NTM and negative immunohistochemistry for thyroglobulin, thyroid transcription factor-1 (TTF-1), and calcitonin.[7] Given the degree of clinical suspicion, definitive histology by surgical biopsy may be needed to confirm the diagnosis.[9]

Treatment of NTM is not well established and depends on the presence of clinically- relevant symptoms, other concomitant systemic metastases, pre-existing co-morbidities, and the patient's overall prognosis.[3] Therefore, management of NTM should depend on the individual patient condition.[8,9] The general rule is to secure the airway and perform conservative thyroid resection in an effort to prevent airway compromise.[9] The extent of the surgical procedure does not seem to impact long-term prognosis.[3] It is often considered to be palliative resection. Radiation would be indicated as adjuvant treatment to control the head and neck disease.[5] Systemic chemotherapy could achieve survival gain particularly in patients with metastases from the breast or colon.[8]

Although NTM may be associated with a poor prognosis, it has been suggested that early detection and aggressive surgical and medical treatment may improve survival in a small percentage of patients.[6] Currently, the literature is equivocal regarding the influence of surgical management on survival time.[6]

Although rare, this report was generated to increase the awareness of the general otolaryngology society to this disease and the possibility of distant metastasis to the thyroid gland.

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