Open Journal of Thoracic Surgery, 2015, 5, 21-25
Published Online June 2015 in SciRes. http://www.scirp.org/journal/ojts
http://dx.doi.org/10.4236/ojts.2015.52005

Endotracheal Metastasis from Colon Cancer: A Rare Case

Anna Hartmann Schmidt[1,2], Thomas Decker Christensen[1,2], Line Bille Madsen[3], Anette Højsgaard[1], Sten Schytte[4], Hans Kristian Pilegaard[1,2]

[1]Department of Cardiothoracic and Vascular Surgery, Aarhus University Hospital, Aarhus, Denmark
[2]Institute of Clinical Medicine, Aarhus University Hospital, Aarhus, Denmark
[3]Department of Pathology, Aarhus University Hospital, Aarhus, Denmark
[4]Department of Otorhinolaryngology, Aarhus University Hospital, Aarhus, Denmark
Email: annaschm@rm.dk

Received 11 March 2015; accepted 26 May 2015; published 29 May 2015

Abstract

Primary tracheal cancer is a well-known disease while metastases to the trachea from distant sites are exceedingly rare. We report a case of endotracheal metastasis from a colon cancer in a female, who underwent surgery for a sigmoid cancer with no metastases. Five years later, she was diagnosed with a solitary pulmonary metastasis and underwent a left lower lobectomy. After further two years, a tracheal metastasis was found. She was successfully treated with a tracheal resection. In conclusion, it is important to know that colorectal cancer may provide endotracheal metastases. Definitive and aggressive treatment of these metastases is advisable.

Keywords

Colorectal Neoplasms, Neoplasm Metastasis, Tracheal Neoplasm

1. Introduction

Primary tracheal cancer is a well-known disease with an incidence of 1 in a million, and it accounts for 0.02% of all malignant diseases [1].

Metastases to the trachea from distant sites are exceedingly rare. There have been reported cases of endotracheal metastases from renal cell carcinoma, breast cancer, soft tissue liposarcoma, malignant melanoma and squamous cell cancer of the head and neck [2]-[6].

Endotracheal metastasis originated from colorectal cancer has only been reported in 7 cases, hereby 3 arriving from colon cancer [7]-[12].

How to cite this paper: Schmidt, A.H., Christensen, T.D., Madsen, L.B., Højsgaard, A., Schytte, S. and Pilegaard, H.K. (2015) Endotracheal Metastasis from Colon Cancer: A Rare Case. *Open Journal of Thoracic Surgery*, **5**, 21-25.
http://dx.doi.org/10.4236/ojts.2015.52005

The clinical presentation of a tumour in trachea is characterized by dyspnea, coughing, hemoptysis, wheezing and stridor [1].

We report a case of endotracheal metastasis from a colon cancer in a female, who previously underwent surgery for a sigmoid cancer and later resection of a metastasis to the lung.

2. Case Report

A 59-year-old woman was diagnosed with a sigmoid cancer staged pT1N0M0 in 2007. She underwent laparoscopic resection of the sigmoid and did not receive adjuvant chemotherapy. One year later, she was diagnosed with right-sided breast cancer staged pT1N0M0. She was treated with lumpectomy and adjuvant radiotherapy.

In 2012 she presented with a cough and blood-tinged sputum. A chest X-ray revealed a pulmonary nodule in the left lower lobe. Investigations including positron emission tomography-computed tomography (PET-CT) and bronchoscopy were performed, and the conclusion was that the nodulus was a solitary metastasis from her sigmoid cancer. There was no mediastinal lymphadenopathy or other systemic findings. Because the metastasis occupied most of the left lower lobe she underwent a left lower lobectomy without adjuvant treatment.

In 2014 she was admitted due to inspiratory stridor and hemoptysis, and a CT scan revealed an endotracheal mass (**Figure 1**). Carcinoembryonic antigen (CEA) was 3 µl/l (normal level < 4 µl/l). A bronchoscopy with biopsy was performed and histology showed adenocarcinoma positive for cytokeratin (CK) 20 and caudal type homeobox 2 (CDX2) but negative for CK7 and thyroid transcription factor (TTF-1). Accordingly, it was concluded that it might be a metastasis from her sigmoid cancer. A PET-CT showed no systemic affection (**Figure 2**). Subsequently she underwent a tracheal resection. Through a Kocher's neck incision and an L-shaped hemisternotomy two trachealrings were removed, and an end-to-end anastomosis was performed.

Histology showed tubular glandlike formations lined with atypical columnar epithelium (**Figure 3**). The histology slides were immunostained using Ventana OptiView ready to use kits. The tumour cells were positive for CDX2 and CK20 but negative for CK7, TTF-1, napsin, tumour protein 63 (p63), CK5 and CK6. There were microscopic clear margins. At 3 months of follow-up the patient is asymptomatic and no signs of recurrent disease.

3. Discussion

Several possibilities were considered to find the exact diagnosis of the tracheal tumour. It might be a metastasis from her previous colon or breast cancer. Furthermore, it could be a primary tracheal cancer.

By looking at the immunohistology the diagnosis was defined. The CK7−/CK20+, CDX2+ pattern is considered highly specific for adenocarcinoma of the colon, and was the pattern in our case (**Figure 4** and **Figure 5**) [13].

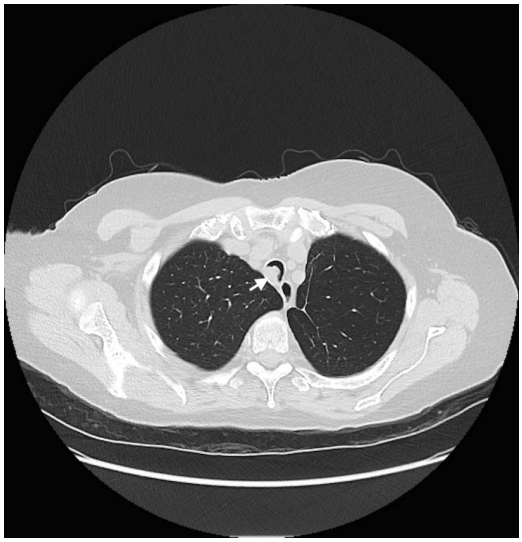

Figure 1. Computed tomography (CT) scan showing endotracheal metastasis (white arrow).

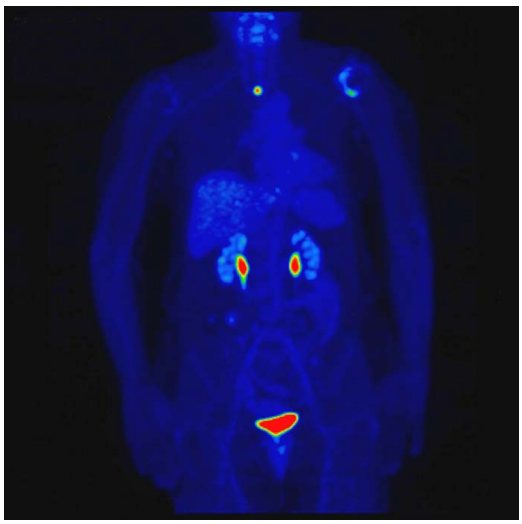

Figure 2. Positron emission tomography-computed tomography (PET-CT) scan showing no systemic affection. The fluorodeoxyglucose-uptake in the left shoulder is reactive, non-pathologic.

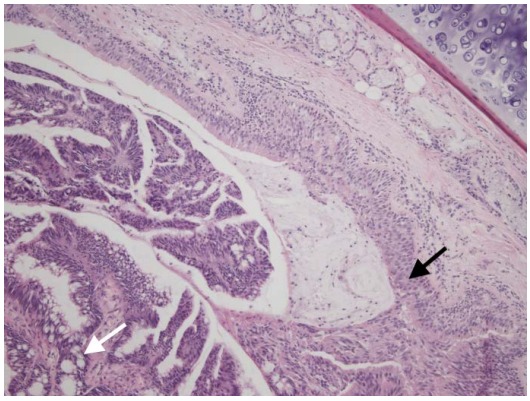

Figure 3. Histology showing metastasis in the tracheal lumen with glandlike formations (white arrow) replacing the normal respiratory epithelium (black arrow). (Hemotoxylin-eosin, 100× magnification).

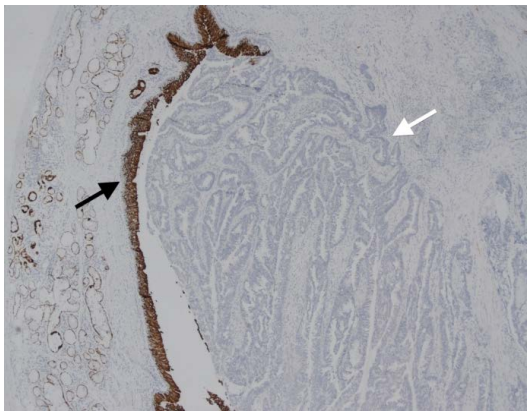

Figure 4. Cytokeratin 7 (CK7) immunostained slide showing positive normal epithelial cells in the trachea (black arrow) but no reactivity in the metastasis (white arrow). (CK7, Ventana OptiView clone SP52, 40× magnification).

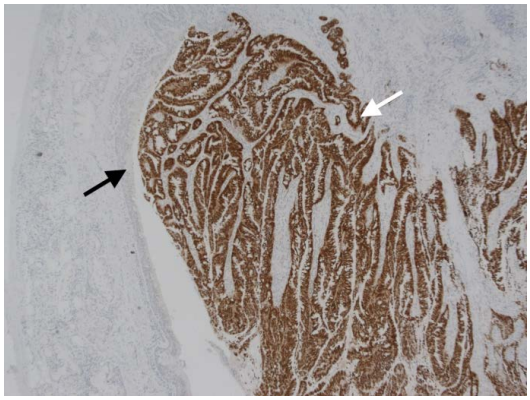

Figure 5. Caudal type homeobox 2 (CDX2) immunostained slide showing positive cells in the tracheal metastasis (white arrow) but no reactivity in the normal respiratory epithelium (black arrow). (CDX2, Ventana OptiView clone EPR1764Y, 40× magnification).

A primary tracheal cancer would typically express CK7 and TTF-1 if it was an adenocarcinoma or CK5/6 and p63 if it was a squamous cell carcinoma. The immunoprofile was not considered consistent with breast cancer or primary tracheal cancer. The conclusion was a metastasis from the prior colon cancer.

The patient had symptoms in terms of stridor, coughing and hemoptysis. She had a low co-morbidity, and was very fit. It has been described that symptoms varies from none to hemoptysis, cough and stridor. The CEA level in the presented case was stable (approximately 3 µl/l), but a progressive increase in the CEA level has been described [12]. This variability in both symptoms and CEA level can make it challenging to diagnose endotracheal metastases from a colon cancer.

Endotracheal tumours can be discovered by having symptoms leading to further investigations or as a coincidental finding during control program. Diagnosis of an endotracheal tumour can be defined in several ways. In this case a CT scan verified the suspicion of tracheal obstruction due to symptoms. Other ways to establish the diagnosis of tracheal metastasis is bronchoscopy [10] [11] or PET-CT [8] [9] [12]. PET-CT was in this case performed in order to determine any systemic affection.The fluorodeoxyglucose-uptake in the left shoulder was mild compared to the tracheal metastasis. Furthermore, it was in close relation to the joint and therefore it was considered as reactive inflammation and not as a metastasis.

The normal metastatic pattern in adenocarcinoma of the colon is predominantly peritoneum, liver and lungs [14]. The constantly improvement in treatment of colorectal cancer and the fact that patients receive surgery early in the course of their disease, should intuitively lead to fewer patients having metastases. Nevertheless, patients still acquire distant metastases in abnormal anatomical locations.

Guidelines generally recommend an individual follow-up of patients treated for colorectal cancer. This includes physical examination, CEA testing, colonoscopy and CT scans typically for up to five years [15]. In this case, a CT scan was performed 5 months prior to the debut of tracheal-obstruction symptoms as a part of the routine control program. At that moment, the tracheal metastasis was 2 mm, but was unfortunately not recognized. Due to the variability in symptoms and CEA level it can be difficult to discover endotracheal metastasis in a routine control program. Awareness of the risk of endotracheal metastasis is needed even if relevant symptoms are absent.

4. Conclusion

In conclusion, it is important to know that colorectal cancer can provide endotracheal metastases.

References

[1] Licht, P.B., Friis, S. and Pettersson, G. (2001) Tracheal Cancer in Denmark: A Nationwide Study. *European Journal of Cardio-Thoracic Surgery*, **19**, 339-345. http://dx.doi.org/10.1016/S1010-7940(01)00597-8

[2] Koyi, H. and Branden, E. (2000) Intratracheal Metastasis from Malignant Melanoma. *Journal of the European Academy of Dermatology and Venereology*, **14**, 407-408. http://dx.doi.org/10.1046/j.1468-3083.2000.00100.x

[3] Nair, S., Kumar, P. and Ladas, G. (2007) Intratracheal Metastasis Secondary to Soft Tissue Liposarcoma. *Singapore Medical Journal*, **48**, e81-e83.

[4] Shavit, L., Maly, B., Rosenbaum, E. and Grenader, T. (2007) Endotracheal Metastases in Renal Cell Carcinoma: A Life-Threatening but Treatable Complication. *European Journal of Internal Medicine*, **18**, 161-163. http://dx.doi.org/10.1016/j.ejim.2006.07.029

[5] Charalabopoulos, K., Dalavaga, Y., Stefanou, D., Charalabopoulos, A., Bablekos, G. and Constantopoulos, S. (2004) Direct Endobronchial Metastasis Is a Rare Metastatic Pattern in Breast Cancer. *International Journal of Clinical Practice*, **58**, 641-644. http://dx.doi.org/10.1111/j.1368-5031.2004.00039.x

[6] Nguyen, B.D., Ram, P.C. and Roarke, M.C. (2008) Endotracheal Metastasis from Squamous Cell Cancer of the Head and Neck: PET/CT Imaging. *Clinical Nuclear Medicine*, **33**, 340-341. http://dx.doi.org/10.1097/RLU.0b013e31816a790a

[7] Watanabe, S., Oda, M., Ohta, Y. and Watanabe, G. (2002) Endotracheal Metastasis of Rectal Cancer. *European Journal of Cardio-Thoracic Surgery*, **21**, 924. http://dx.doi.org/10.1016/S1010-7940(02)00098-2

[8] Shim, H., Kwon, H., Kim, T. and Kim, S. (2010) Endotracheal Metastasis Seen on FDG PET/CT in a Patient with Previous Colorectal Cancer. *Nuclear Medicine and Molecular Imaging*, **44**, 294-296. http://dx.doi.org/10.1007/s13139-010-0050-z

[9] Choi, I.Y., Lee, K.Y., Lee, J.H., Je, B.K., Shin, J.S., Um, J.W., Choo, J.Y. and Lee, S.H. (2013) Tracheal Metastasis from Rectal Cancer: A Case Report and Review of the Literature. *Balkan Medical Journal*, **30**, 120-122. http://dx.doi.org/10.5152/balkanmedj.2012.114

[10] Galbis Caravajal, J.M., Sales Badia, J.G., Trescoli Serrano, C., Cordero Rodriguez, P., Jorda Aragon, C. and Naval Sendra, E. (2008) Endotracheal Metastases from Colon Adenocarcinoma. *Clinical & Translational Oncology*, **10**, 676-678. http://dx.doi.org/10.1007/s12094-008-0271-0

[11] Conti, J.A., Kemeny, N., Klimstra, D., Minsky, B. and Rusch, V. (1994) Colon Carcinoma Metastatic to the Trachea. Report of a Case and a Review of the Literature. *American Journal of Clinical Oncology*, **17**, 227-229. http://dx.doi.org/10.1097/00000421-199406000-00009

[12] Lee, M., Lee, Y.K., Jeon, T.J., Sohn, S.K. and Ryu, Y.H. (2014) A Case of Tracheal Metastasis in Colon Cancer: Detection With 18F-FDG PET/CT. *Clinical Nuclear Medicine*, **40**, 91-92

[13] Bayrak, R., Haltas, H. and Yenidunya, S. (2012) The Value of CDX2 and Cytokeratins 7 and 20 Expression in Differentiating Colorectal Adenocarcinomas from Extraintestinal Gastrointestinal Adenocarcinomas: Cytokeratin 7-/20+ Phenotype Is More Specific than CDX2 Antibody. *Diagnostic Pathology*, **7**, 9.

[14] Hess, K.R., Varadhachary, G.R., Taylor, S.H., Wei, W., Raber, M.N., Lenzi, R. and Abbruzzese, J.L. (2006) Metastatic Patterns in Adenocarcinoma. *Cancer*, **106**, 1624-1633. http://dx.doi.org/10.1002/cncr.21778

[15] Meyerhardt, J.A., Mangu, P.B., Flynn, P.J., Korde, L., Loprinzi, C.L., Minsky, B.D., Petrelli, N.J., Ryan, K., Schrag, D.H., Wong, S.L. and Benson 3rd, A.B., American Society of Clinical Oncology (2013) Follow-Up Care, Surveillance Protocol, and Secondary Prevention Measures for Survivors of Colorectal Cancer: American Society of Clinical Oncology Clinical Practice Guideline Endorsement. *Journal of Clinical Oncology*, **31**, 4465-4470. http://dx.doi.org/10.1200/JCO.2013.50.7442