Case Report

Prolonged Remission of Prostate Cancer Presenting as Endobronchial Metastases Following Total Androgen Blockade: A Case Report and Literature Review

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Keywords

Metastatic prostate cancer · Endobronchial metastases · Androgen blockade · Remission

Abstract

We present a rare case of prostatic endobronchial metastases that was successfully treated with total androgen blockade (TAB). This case demonstrates prolonged remission on continuous TAB and continued remission employing intermittent therapy.

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Introduction

Prostate cancer presenting as endobronchial metastases is rare as evidenced by only 22 reports in the literature as of 2019 [1–11]. Survival with metastatic prostate cancer with distant metastases is generally poor with 5-yr survival rates of 30.5% according to the Seer database [12]. Median survival following diagnosis of endobronchial metastases from any extra-thoracic cancer has ranged from 15.5–16.1 months [13]. A Korean study of all patients detected to have endobronchial metastases on biopsy at one institution over an 18-yr span showed a median survival from diagnosis of 5 months for 2 patients diagnosed with metastatic prostate cancer to the endobronchus [13]. Long term follow after diagnosis of prostatic carcinoma with endobronchial metastasis is absent from the literature with the longest previously documented survival, to our knowledge, being 13 months [7]. We present 18-yr survival in a patient with confirmed endobronchial metastases from an earlier primary prostate cancer.

Case Presentation

A 55-year-old Caucasian male presented in 1990 with Stage pT3b N0 MX moderately-differentiated carcinoma of the prostate with seminal vesicle involvement. Patient had radical retropubic prostatectomy (RPR) performed with bilateral pelvic lymph node dissection (BPLND). He declined adjuvant therapy following therapy, and at 1-year post-op he had salvage external radiation therapy (XRT) for a pelvic nodule.

Patient presented 9 years later in July 1999 at 63-years-old with cough, dyspnea, and 1 episode of massive hemoptysis without chest pain. On physical exam, patient was anicteric. There was no lymphadenopathy. Chest exam was unrevealing with no dullness to percussion, rub, or wheezing. Heart had easily audible S1 and S2. Liver was normal in vertical span. No spleen or abdominal mass was present. Chest CT with contrast showed a right middle lobe and hilar mass. Bronchoscopy demonstrated endobronchial disease traversing the carina, and biopsy of the right middle lobe and left carina showed poorly-differentiated, non-small cell carcinoma consistent with metastases from prostatic carcinoma. Immunohistochemical stain of the tumor showed positive immunoreactivity to PSA. The specimens demonstrated negative immunoreactivity to thyroid-transcription factor-1 (TTF-1) and were negative for intraplastic mucin and prostatic specific acid phosphatase. Serum PSA was 425.3 ng/mL. Bone scan was consistent with the new appearance of metastatic disease as indicated by foci of increased activity in the mid-thoracic spine, ribs, and pelvis.

Patient was prescribed total androgen blockade, employing q 3 month depot leuprolide and flutamide 250 mg PO tid. On follow-up his PSA dropped precipitously from 425 ng/mL initially to 40.4 ng/mL at 1 month, 5.8 ng/mL at two months and 1.0 ng/mL at 3 months. His cough, dyspnea and hemoptysis resolved. Repeat chest CT revealed virtual complete resolution of mediastinal adenopathy showing subtle residual hilar mass or adenopathy on right and some persistent localized volume loss or scarring of the right middle lobe.

Patient continued on androgen blockade. PSA has been undetectable at <0.1 ng/mL since October 2000. Patient replaced depot leuprolide with q 3 month depot goserelin 10.8 mg in 2003, but he continued flutamide. Bone scan performed on July 2003 showed resolution of

prior metastatic bone lesions. Chest CT was repeated in 2013 and noted the absence of parenchymal nodules or mass in either lung, as well as the absence of axillary, mediastinal, or hilar lymphadenopathy.

At patient's request and in consideration of recent literature, androgen blockade was discontinued in October 2014 due to fatigue [14]. Fatigue markedly improved following cessation of androgen deprivation.

As of April 2019, it has been 18 years total the patient has remained in biochemical and clinical remission, with the last 5 years without androgen blockade. PSA has continued to be undetectable at <0.1 ng/mL. Patient continues to deny pulmonary symptoms including cough, shortness of breath and hemoptysis. Patient's quality of life is excellent.

Discussion

Prostate cancer presenting as endobronchial metastasis is uncommon as supported by our review of the literature. In total we identified 23 reports of patients, including this case, presenting with prostatic endobronchial metastases (Table 1). The mean age at presentation was 70 years. Including our case, there are 9 cases documented with an extended time interval between primary tumor diagnosis and diagnosis of endobronchial metastases. The longest documented interval was 20 years [2]. Our case has an interval of 9 years. Hemoptysis or cough were the most common presenting symptoms each occurring at rates of 35% (8/23) and 40% (9/23 patients) respectively. In consideration of these findings, prostatic endobronchial metastases should be included on the differential for patients with nonspecific symptoms of cough or hemoptysis, especially if the patient has a history of primary prostate cancer, even if it is remote. In addition, due to the infrequency of this condition it is appropriate to document patients' clinical course for future study.

Our case presentation demonstrates that successful treatment and long-term remission is possible for metastatic prostate carcinoma with endobronchial metastases. Prognosis for endobronchial metastases is dependent on the tissue of origin, but prognosis is generally poor [13]. TAB was the standard of care for metastatic prostatic cancer in 1999 and remains a key component of treatment [15].

Additionally, recent literature has shown that intermittent androgen deprivation is non-inferior, in terms of survival, to continuous therapy and allows for minimization of side effects [14]. Our case supports this approach for prostatic endobronchial metastases with our patient's continued 5-year biochemical and clinical remission following cessation of TAB.

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None.

Statement of Ethics

This research was conducted ethically in accordance with the World Medical Association Declaration of Helsinki. The subject has given their written informed consent to publish their case.

Disclosure Statement

The authors have no conflicts of interest to declare.

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Author Contributions

R.S. Freund conducted the literature review, drafted the manuscript, and was involved in clinical follow-up. P.V. Pickens edited the manuscript and was involved in execution and development of the therapeutic plan, as well as clinical follow-up. R.D. Mino was involved in patient evaluation, therapeutic plan, and treatment. J.Z. McDonald was involved in patient evaluation and clinical follow-up. All authors critically reviewed and approved the final manuscript.

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Table 1. Case reports documenting prostatic endobronchial metastasis*

Authors [Ref.], year	Age, years	Presenting symptoms	Length of survival at last follow-up	Time interval between diagnosis of primary tumor and diagnosis of endobronchial metastasis
Current case	63	Cough, hemoptysis, dyspnea	18 years	9 years
Nawaz et al. [1], 2019	80	Dyspnea	–	–
Hatakeyama et al. [2], 2019	78	Cough, chest pain, weight loss	–	20 years
Hotta et al. [3], 2017**	67	Cough, dyspnea	–	Concurrent diagnosis
Bonney et al. [4], 2017	67	Asymptomatic	–	3 years
Bonney et al. [4], 2017	77	Asymptomatic	–	10 years
Kim et al. [5], 2016	68	Hemoptysis	–	–
Martinez et al. [6], 2016	80	Chest pain	–	–
Shen et al. [7], 2010	72	Asymptomatic	13 months	Concurrent diagnosis
Garai et al. [3], 2010	84	Hemoptysis, weight Loss	–	Concurrent diagnosis
Gerogianni et al. [3], 2008	64	Cough, dyspnea	–	5 years and 5 months
Lee et al. [8], 2006	74	Cough	–	–
Yamada et al. [3], 2004	67	–	–	Concurrent diagnosis
Takahashi et al. [3], 2001	73	Hemoptysis	–	Concurrent diagnosis
Kwon et al. [9], 2000	78	Cough	–	–
Pérez et al. [10], 1995	72	Hematuria	–	Concurrent diagnosis
Egawa et al. [3], 1993	63	Cough, dyspnea	–	Concurrent diagnosis
Lee et al. [3], 1990	78	Hemoptysis	–	3 years
Helena et al. [11], 1990	81	Hemoptysis, dyspnea	–	1 year and 7 months
Kenny et al. [3], 1988	59	Hemoptysis, dyspnea	–	Concurrent diagnosis
Scherz et al. [3], 1986	67	–	–	7 years
Lalli et al. [3], 1983	55	Cough, hemoptysis	–	Concurrent diagnosis
Scoggins et al. [3], 1978	58	Cough	–	4 years

* We performed an extensive review of the English language literature using the databases of PubMed Central, Web of Science, Cochrane Library, and Google Scholar with keywords of (“prostate” or “prostatic,”) and (“endobronchus” or “endobronchial”) and (“metastases” or “metastatic” or “metastasis”). We also reviewed references of relevant papers. Non-English publications were included in the count, if the age at presentation and disease entity could be substantiated by an English language abstract or reference from another journal. Retrospective reviews or post-mortem cases were not included. Data was unavailable for boxes marked with the dash: “–” symbol.

** Select case reports appearing in Table 1 are cited under Hotta et al. [3] rather than individually referencing each case. Hotta et al. previously documented these cases in their literature review.