ELSEVIER

Urologic Oncology: Seminars and Original Investigations ▮ (2017) ▮▮▮–▮▮▮

UROLOGIC ONCOLOGY

Original article

Metastatic renal cell carcinoma: Patterns and predictors of metastases—A contemporary population-based series

Thenappan Chandrasekar, M.D.*, Zachary Klaassen, M.D., Hanan Goldberg, M.D., Girish S. Kulkarni, M.D., Ph.D., F.R.C.S.C., Robert J. Hamilton, M.D., M.P.H., F.R.C.S.C., Neil E. Fleshner, M.D., M.P.H., F.R.C.S.C.

Department of Surgical Oncology, Division of Urologic Oncology, University Health Network and University of Toronto, Toronto, Ontario, Canada

Received 7 March 2017; received in revised form 25 May 2017; accepted 27 June 2017

Abstract

Objective: To assess the patterns and predictors of metastatic disease in renal cell carcinoma (RCC) at the time of diagnosis in a contemporary series.

Methods: The Surveillance, Epidemiology, and End Results database was queried for all patients with kidney RCC from 2010 to 2013 ($N = 50{,}815$). Distribution and predictors of distant metastases at diagnosis were assessed. Multivariate logistic regression hazard analyses were performed to determine covariates associated with the likelihood of having metastases at diagnosis, whereas competing risks regression analysis was used to assess predictors of cancer-specific mortality (CSM) in patients with metastatic disease.

Results: Lung (7.73%) and bone (5.17%) metastases were the most common. The strongest predictors of metastatic disease were disease-specific factors, such as clinical T-stage (cT4 vs. cT1; odds ratio $= 43.08$; $P < 0.01$) and higher Fuhrman grade (FG4 vs. FG1; odds ratio $= 5.09$; $P < 0.01$). Papillary RCC and chromophobe RCC were associated with localized disease at the time of diagnosis. For CSM, the presence of brain and liver metastases were associated with worse CSM than lung or bone metastases. Although patient factors did not contribute to the presence of metastases at diagnosis, lower socioeconomic status and being widowed/divorced predicted worse CSM.

Conclusion: Understanding the distribution of distant metastases and associated CSM is important to counseling patients with newly diagnosed metastatic RCC. Although pathologic factors drive the presence of metastases at diagnosis, health care deficits in treatment remain. © 2017 Elsevier Inc. All rights reserved.

Keywords: Renal cell carcinoma; Lung metastases; Bone metastases; Distant metastases; Outcomes

1. Introduction

Renal cell carcinoma (RCC) has continued to increase in incidence in the United States over the past 2 decades, likely due to increasing obesity rates and greater use of cross-sectional imaging [1–3]. In 2016, there were approximately 62,700 new cases of RCC [4]. Despite the steady 3%–4% annual increase in incidence of RCC and known stage migration [5–7], the literature continues to report an incidence of de novo metastatic RCC of up to 30% [8–10].

Although the prognosis for metastatic RCC remains poor, there are new therapies on the horizon. Surgical management (cytoreductive nephrectomy and metastasectomy) remains an important component of the management of metastatic RCC [11,12]. In addition to the targeted therapies introduced in the past decade, novel immunotherapies are beginning to demonstrate promising results. It is important to understand the presentation of patients with metastatic RCC, and how this may influence management decisions.

There is limited data regarding the presentation of these patients, specifically with relation to the pattern of metastatic spread. Common sites of metastatic disease include lung parenchyma, bone, liver, brain, adrenal glands, and regional/distant lymph nodes [13]. Although most studies have focused on overall incidence and survival of patients with metastatic RCC [7,9], only a few small retrospective

* Corresponding author. Tel.: +1-647-701-6025; fax: +1-844-351-9508.
E-mail address: thenappan.chandrasekar@gmail.com (T. Chandrasekar).

http://dx.doi.org/10.1016/j.urolonc.2017.06.060
1078-1439/© 2017 Elsevier Inc. All rights reserved.

series have addressed the clinical presentation of this patient population [14]. Bianchi et al. [15] used the Nationwide Inpatient Sample database to assess metastatic spread in 11,157 patients with metastatic RCC between 1998 and 2007, but this was limited by the inpatient nature of the database.

The objective of this manuscript is to build on the work of Bianchi and colleagues by using a larger modern population-based dataset to provide guidance regarding predictors and patterns of metastatic disease in patients with RCC.

2. Methods

2.1. Study population

The Surveillance, Epidemiology, and End Results (SEER) database reports cancer-specific outcomes from specific geographic areas representing 28% of the US population. Using the SEER database, we first identified patients with 8 RCC-specific histology codes (8255, 8260/3, 8310, 8312/3, 8316/3, 8317, 8318/3, and 8319/3) and the kidney as the primary site of tumor. As the variables assessing distant metastases at diagnosis are only available after 2010, we limited the study cohort to patients diagnosed between 2010 and 2013.

2.2. Description of covariates

Demographic variables of interest included age at diagnosis, gender, race, insurance, marital status, and region based on SEER registry. Based on prior literature [16–18], a county-level socioeconomic (SES) measure was created, based on the percentage of individuals with less than a high school education, percentage of individuals below the poverty line, percentage of individuals unemployed, percentage of individuals who were foreign-born, and median household income.

2.3. Statistical analysis

Descriptive statistics for demographic and socioeconomic variable comparisons were performed by the Student's *t*-test for continuous variables and the chi-square test for categorical variables. Distributions and trends of histology and metastases location at time of diagnosis were assessed. Multivariable logistic regression hazard models with Bonferroni correction were performed to generate odds ratios for the identification of factors associated with distant metastases at the time of diagnosis and overall mortality (OM). Competing risks regression analysis with Bonferroni correction was performed to identify predictors of cancer-specific mortality (CSM) in patients with metastases at diagnosis. All statistical tests were 2-tailed and a $P < 0.05$ was considered statistically significant. Statistical tests were performed using R statistical package—R Core Team (2012) and SAS 9.4 (SAS Institute, Cary, NC).

3. Results

3.1. Demographics

A total of 50,815 patients with 8 RCC-specific histology codes were diagnosed between 2010 and 2013. Table 1 highlights the demographics of patients with and without metastatic disease at diagnosis. In this series, 6,610 patients (13.0%) had metastases at the time of diagnosis. Patients with sarcomatoid or collecting duct histology, higher clinical T-stage (cT stage), higher histologic Fuhrman grade (FG), or clinical nodal disease (cN1) were more likely to have metastases at diagnosis. Patients with metastatic disease at diagnosis were much less likely to undergo a radical nephrectomy. Mean and median follow-up for the entire cohort was 19.1 and 17 months, respectively. Mean follow-up was 9.3 months and 20.7 months for patients with and without metastatic disease, respectively.

3.2. Distant metastases and descriptive analysis

Of the entire patient cohort and across all histologic subtypes, lung and bone metastases were the most common (Fig. 1). Fig. 1 highlights the relative incidence of distant metastases based on histologic subtype. Clear-cell RCC demonstrates an incidence paralleling the entire cohort. Papillary RCC and chromophobe RCC demonstrate much lower incidence of all distant metastases in comparison. Sarcomatoid RCC and collecting duct RCC, although only representing 1% of the entire cohort, are associated with high incidence of distant metastases. In general, the location of the distant metastases, from highest to lowest incidence, was lung, bone, liver, and brain; the only exception is in patients with chromophobe RCC, in whom bone metastases at diagnosis were more common than lung metastases.

The pattern of metastatic spread at the time of diagnosis was then examined. Fig. 2A demonstrates the distribution of metastatic disease the time of diagnosis, including synchronous spread. Metastasis to the lung (51.2%) and regional lymph nodes (41.5%) predominate, followed by spread to the bone (33.5%). Fig. 2B identifies the proportion of patients who had isolated metastatic disease to the sites listed. Again, metastatic spread to the lung (16.8%), regional lymph nodes (12.1%), and bone (11.1%) are most common.

3.3. Predictors of metastatic disease at diagnosis

Multivariable logistic regression hazards analysis was used to determine predictors of presenting with any metastatic disease at the time of diagnosis (Supplementary Table 1). For patient-specific factors, age, sex, SES,

Download English Version:

https://daneshyari.com/en/article/5702508

Download Persian Version:

https://daneshyari.com/article/5702508

Daneshyari.com