



Contents lists available at ScienceDirect

Journal of Clinical Neuroscience

journal homepage: www.elsevier.com/locate/jocn

Review article

National care among patients with WHO grade I intracranial meningioma

Sunil W. Dutta^{a,*}, Jennifer L. Peterson^{b,c}, Laura A. Vallow^b, Anita Mahajan^d, Steven S. Rosenfeld^e, Alfredo Quiñones-Hinojosa^c, Daniel M. Trifiletti^{b,c}

^a Department of Radiation Oncology, University of Virginia, Charlottesville, VA, USA

^b Department of Radiation Oncology, Mayo Clinic, Jacksonville, FL, USA

^c Department of Neurological Surgery, Mayo Clinic, Jacksonville, FL, USA

^d Department of Radiation Oncology, Mayo Clinic, Rochester, MN, USA

^e Department of Neurology, Mayo Clinic, Jacksonville, FL, USA

ARTICLE INFO

Article history:

Received 19 March 2018

Accepted 6 June 2018

Available online xxxxx

Keywords:

Benign
Meningioma
Database
NCDB
Facility
Race

ABSTRACT

Purpose: To analyze the national treatment trends of patients diagnosed with benign intracranial meningioma.

Methods and materials: Data was obtained from the National Cancer Database (NCDB) for patients with WHO grade I meningioma tumors between 2004 and 2014 (190,527 patients), diagnosed by either surgical specimen or diagnostic imaging. Univariable and multivariable analyses (binary logistic models) were performed to generate odds ratios (OR) and investigate factors associated with definitive initial treatment compared to initial observation. Initial treatments considered included surgical resection and/or radiation, including either fractionated external beam radiotherapy (EBRT) or stereotactic radiosurgery (SRS).

Results: The rate of observation increased over time, from 37% in 2004 to 55% in 2014 ($p < 0.001$). Conjointly, the rate of resection decreased from 50% to 37% from 2004 to 2014 ($p < 0.001$). The utilization of radiotherapy, including SRS, remained generally stable over time at 6% or less. SRS was more frequently utilized, compared to EBRT, as definitive treatment (4.6% versus 1.7%, respectively, $p < 0.001$). Compared to Community Cancer programs, patients at Academic/Research programs were more likely to receive definitive initial treatment over observation (OR = 2.909, each $p < 0.001$).

Conclusions: There is a national trend favoring initial observation for radiographically diagnosed WHO grade I meningioma. However, patients presenting to academic facilities are more likely to receive definitive initial treatment. Further research into differing approaches among treatment facilities for this common tumor may help clarify this trend.

© 2018 Elsevier Ltd. All rights reserved.

1. Introduction

Meningioma accounts for approximately 30% of brain and central nervous system tumor diagnoses and is the most common primary brain tumor in adults [1]. Histologically, they are classified into three groups by the World Health Organization (WHO), with over 80% classified as grade I (benign) and the remaining either grade II (atypical) or III (malignant) [2,3]. They can be reliably diagnosed with modern imaging, preferably magnetic resonance imaging (MRI) [4]. Because of the slow growth rate of these tumors, initial observation for small, asymptomatic benign

meningioma is the preferred treatment option by the National Comprehensive Cancer Network (NCCN) and European Association of Neuro-Oncology (EANO) [5,6]. The decision to provide local therapy for benign meningioma is complex and based on a multitude of patient and tumor features. Local therapy options include surgical resection and/or radiation, with either fractionated external beam radiotherapy (EBRT) or stereotactic radiosurgery (SRS) as accepted modalities based on patient and tumor-specific details [5,6].

Currently, there is a general lack of prospective clinic trials to guide management among patients with meningioma [7]. Therefore, investigation through large registries can help recognize modern treatment patterns and identify potential health care disparities [8]. As of 2004, benign brain tumors were required to be included in cancer registries, improving the reliability of

* Corresponding author at: University of Virginia, Department of Radiation Oncology, PO Box 800383, Charlottesville, VA 22908, USA.

E-mail address: nwdutta@gmail.com (S.W. Dutta).

population-based cohort studies to match those of malignant tumors [9]. In this study, we leverage the National Cancer Database (NCDB) to analyze the treatment trends of patients diagnosed with benign meningioma since registry inclusion (2004–2014), aiming to give insight on the care of patients with this common tumor.

2. Methods and materials

2.1. Data source

The NCDB, established in 1989, is a nationally recognized clinical oncology database and is sponsored by the American College of Surgeons and the American Cancer Society. The NCDB collects data from more than 1500 facilities accredited by the Commission on Cancer and contains information on treatments and outcomes for patients with malignant disease as well as certain benign tumors including those arising in the meninges. The current database gathers more than 70% of new cancer diagnoses in the United States (U.S.) and contains more than 34 million historical records [10].

Data was obtained from the NCDB for patients diagnosed with central nervous system tumors between 2004 and 2014 (448,453 patients). Meningioma was diagnosed by either surgical pathology (if resection) or the available clinical data (i.e. diagnostic imaging). Patients were excluded if they had non-meningioma histology or grade II-III meningioma histology (257,962 total excluded, Fig. 1). The remaining 190,527 patients were then stratified and analyzed based on available database information [11].

2.2. Statistical analyses

The primary outcome measured for this study was the initial treatment (including initial observation) of patients with confirmed or presumed WHO grade I meningioma. Important prognostic factors which may influence treatment, including gender, age,

race, median income, distance to hospital, facility type, Charlson/Deyo score, and tumor size were evaluated. Local therapy options evaluated included resection, EBRT, and SRS. Facility volume was defined as the total number of included patients evaluated at that center.

Univariable and multivariable analyses (binary logistic models) were performed to generate odds ratios (OR) and investigate factors associated with initial treatment (any modality) compared to initial observation. Potentially prognostic variables in the multivariable models were chosen through purposeful selection and univariable analyses to investigate significance. Factors associated with a $p < 0.10$ on univariate analysis were included in the multivariable models. Utilization of local therapies across subgroups was compared using the chi-square test. All statistical analyses were performed using the SPSS program (SPSS, version 24.0; SPSS Inc., Chicago, IL) and $p < 0.05$ on multivariable analysis were considered statistically significant.

3. Results

3.1. Clinical characteristics

The median age at diagnosis for the entire cohort (190,527) with benign meningioma was 65 years (range 18–90+ years). There was a clear gender predilection toward females, with 49,016 (25.7%) men and 141,511 (74.3%) women. The majority of patients were Caucasian (76.5%), followed by African American (12.0%), Hispanic (6.0%), then Asian/Pacific Islander (3.1%). Most patients were located within 25 miles of the hospital (73.4%) and were managed at an academic (37.4%) or comprehensive community cancer program (37.6%). The majority of tumors were within 1–2 cm (24.8%) or unknown (29.9%). Complete information, separated by whether or not upfront local therapy was delivered, is available in Table 1.

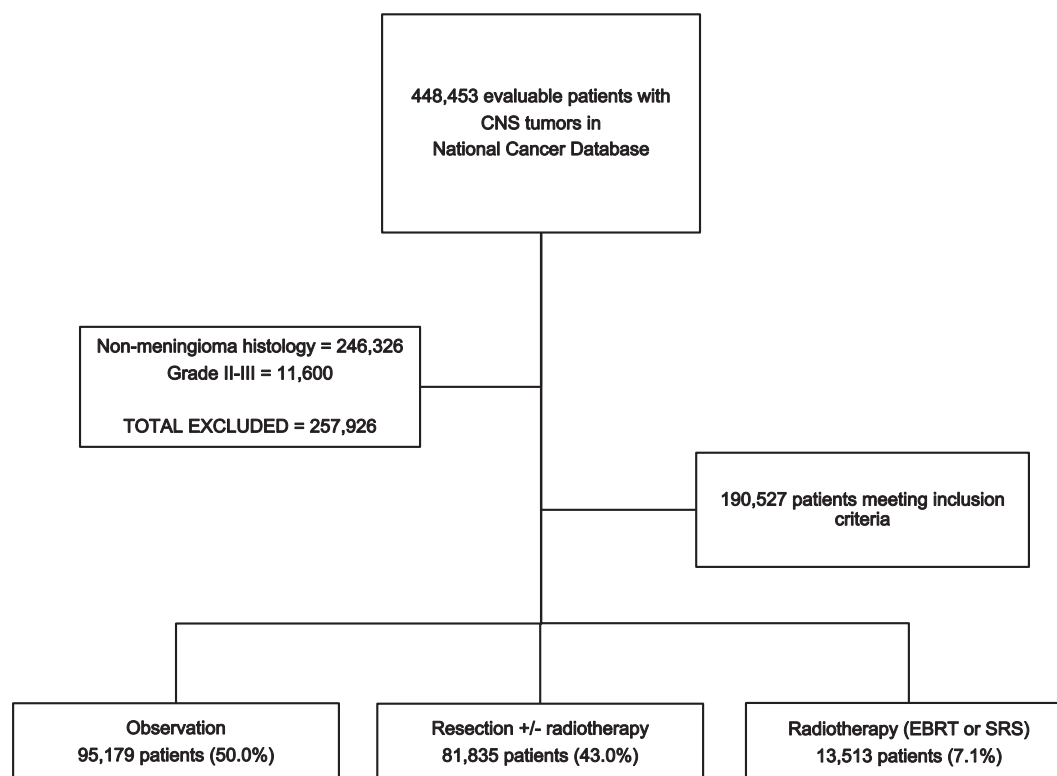


Fig. 1. National Cancer Database cohort selection diagram.

Download English Version:

<https://daneshyari.com/en/article/10215442>

Download Persian Version:

<https://daneshyari.com/article/10215442>

[Daneshyari.com](https://daneshyari.com)