Thymic Tumors: A Retrospective Review of the 10-Year OHSU Knight Cancer Institute Experience

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ABSTRACT

Study Design:
Retrospective case-series of thymic malignancies treated at a NCI-Designated Cancer Center.

Objective:
To describe the clinical experience of patients (pts) with thymic tumors (TT) evaluated at Oregon Health & Science University (OHSU) over a ten-year period.

Summary of Background Data:
TT are rare and poorly understood tumors. TT are often asymptomatic until advanced stage, causing significant morbidity and treatment-related complications. Outcomes vary depending on the clinical stage and histologic subtype of TT. We reviewed all cases of TT treated at our institution over a 10 year period, including disease presentation and treatment response to inform potential future research in TT.

Methods:
All pts, eighteen years old or older, with TT seen at OHSU between January 1, 2001 and June 30, 2011 were used in this analysis. Subjects were eligible for inclusion if they were seen during this period and diagnosed with any malignancy arising from the thymus gland, irrespective of histologic subtype. Using a case series design, data were collected in a retrospective manner. The medical record was systematically reviewed for pre-specified variables, including demographic data, tumor histology and stage, treatment history, and survival data.

Results:
Twenty-eight pts were identified with a TT treated at the OHSU Knight Cancer Institute during the defined decade. The mean age at diagnosis was 55 yrs. 17 pts had thymoma (61%), 8 had thymic carcinoma (29%), and the remainder had other TT. Of the total cohort, the majority were male (61%), lifetime never smokers (61%), and Caucasian (96%). Nine pts had myasthenia gravis symptoms (32%). Symptoms at presentation were varied but many experienced chest discomfort/pain, dyspnea, cough, and/or fatigue. The majority were treated with surgery (93%) and radiation therapy (68%) with a mean dose of 54.2 Gy, while 54% received at least one type of chemotherapy (range 0-5). The median DFS was 110 months for thymoma, 30 months for thymic carcinoma, and 52.5 months for the other thymic tumors. The median OS has not been reached for the group of pts.

Conclusions:
Using a retrospective design, we were able to capture the clinical course of pts with TT treated at our tertiary care institution over a ten-year period. Pts were treated with standard therapies, and survival (both disease-free and overall) is similar to historical reports. In addition to longer follow-up, these data suggest additional research should be undertaken to better characterize associated causes of TT. Future research should evaluate for tumor genetic abnormalities potentially amenable to targeted interventions which may improve DFS and OS, especially for aggressive variants of TT.

OBJECTIVE

The specific aim was to describe the clinical experience of patients with thymic tumors evaluated at the Oregon Health & Science University (OHSU) over a ten-year period.

METHODS and MATERIALS

- **Eligible patients were evaluated at OHSU with a diagnosis of thymic cancer between January 1, 2001 and June 30, 2011**
- **OHSU Cancer Registry provided list of eligible patients**
- **Data collected in retrospective manner for each individual subject from the electronic medical record**
- **Pre-specified variables of interest included: demographic information, tumor histology and stage at diagnosis, treatment history, response, and survival**

RESULTS

- **Twenty-eight patients were identified with a thymic malignancy treated at OHSU during the study period (between January 1, 2001 and June 30, 2011)**

Demographic and Treatment Data

Demographics	Overall (n = 28)	Thymoma (n = 17)	Thymic Carcinoma (n=8)	Other thymic tumor (n = 3)*
Age at diagnosis - yr	55	60	52	35
range	20-84	34-84	20-66	29-46
Male -no (%)	17 (61)	10 (59)	4 (50)	3 (100)
White race -no (%)	27 (96)	16 (94)	8 (100)	3 (100)
Smoking status				
Never smoker -no (%)	17 (61)	10 (59)	4 (50)	3 (100)
Former smoker -no (%)	10 (36)	7 (41)	3 (37.5)	0
Current smoker -no (%)	1 (3)	0	1 (12.5)	0
Myasthenia Gravis at diagnosis- no (%)	9 (32)	7 (41)	1 (12.5)	1 (33)
Prior chemotherapy exposure-no (%)	1 (4)	1 (6)	0	0
Prior radiation exposure-no (%)	2 (7)	1 (6)	1 (12.5)	0
Treatment				
Surgery- no (%)	26 (93)	17 (100)	6 (75)	3 (100)
Biopsy only- no (%)	3 (11)	1 (6)	2 (25)	0
R0 resection- no (%)	12 (43)	7 (41)	4 (50)	1 (33)
R1 resection- no (%)	7 (25)	6 (35)	0	1 (33)
R2 resection- no (%)	2 (7)	2 (12)	0	0
unknown- no (%)	2 (7)	1 (6)	0	1 (33)
Radiation Therapy- no (%)	19 (68)	10 (59)	7 (88)	2 (66)
Gy received	54.2	63	50.8	61.5
Chemotherapy- no (%)	15 (54)	10 (59)	4 (50)	1 (33)
mean# chemotherapy types	2.5	2.2	2.5	4

* other thymic tumors include: 2 patients with thymic neuroendocrine tumor, one patient with thymic sarcoma

CONCLUSIONS

- **Retrospective case series is a reasonable method for evaluation of rare tumors**
- **Our single-institution review of an NCI-Designated Cancer Center confirms patients were treated with standard therapies and survival (both disease-free and overall) is similar to historical reports**
- **In addition to longer follow-up, these data suggest additional research is necessary to better characterize possible causes of thymic cancers and improve uniformity of treatments**
- **Future research should evaluate for tumor genetic abnormalities potentially amenable to targeted therapies**

Acknowledgements

The authors would like to thank the Knight Cancer Institute and the Cancer Registry at OHSU for support of this research project.