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Frequency of histological subtypes and patients' survival with tumors originating from thymus

Seyed Mohammad Hosseini [1,*], Ali Reza Nezami [2], Puya Nezami [3], Sasan Razmjoo[1], Sholeh Arvandi [1], Hodjatollah Shahbazian [1]

[1] Department of Radiotherapy and Oncology, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[2] Faculty of Medicine, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran
[3] Tehran University of Medical Sciences, Tehran, Iran

**Corresponding author*: Seyed Mohammad Hosseini, Department of Radiotherapy and Oncology, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran. Tel: +98-9163135583, E-mail: kiahossainy@yahoo.com

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Abstract

Background: Thymoma is a rare tumor in the mediastinum. Due to the fact that a complete study has not been conducted on thymoma in Khuzestan region, this study was designed as part of a comprehensive study on thymoma in Ahvaz Golestan Hospital.

Materials and Methods: This retrospective study was conducted on patients' medical records with Thymoma attending Department of Radiotherapy and Oncology, Ahvaz Golestan Hospital, in a 10-year period from 2001 to 2011. The study also aimed to investigate the epidemiological data; diagnosis and treatment of patients for the duration of the same time.

Results: Among the 26 patients with a mean age of 45.38±SE, ratio of male to female was 5.5 to 1. The majority of the patients were in the range of 30-50 years old which jointly was at 61.8±SE. However, the minimum rate of tumor was seen in decades of 51-60 and 71-80 (7.7 %). In total, 72.7% (n=19) patients had invasive thymoma, while 27.3% (n=8) had noninvasive tumor. In addition, there was a significant relationship between invasive thymoma rate and developing myasthenia gravis. The 3-year survival rate for all patients was equivalent to 83.3%. However; 5-year survival was equal to 71%.

Conclusion: According to the study, most patients with invasive thymoma had a 5-year survival rate and also most of them were with myasthenia gravis.

Keywords: Thymoma, Khuzestan, Metastase, Myasthenia gravis, Invasive thymoma

Background

Thymoma is one of the rarest tumors in the me- diastinum. The thymus is an epithelial lymph or- gan, shaped in trapezoidal form located anterior mediastinum in thoracic cavity which in adult re- placed by adipose tissue. Thymic neoplasms in- clude neurogenic tumors, germ cell lymphoma and mesenchymal. However, Thymoma and thymic car- cinoma and thymolipomas, are originating from thymus components (1). Thymoma and thymic car- cinomas are rare tumors and include totally 1.5-2 % of all malignant diseases and thymic carcinoma includes only 0.06% of total neoplasms in body (1). Thymoma is a tumor that originates from the thy- mus which is invasive locally and in 1/2 cases is noninvasive form. In 1/2 patients Thymoma is asymptomatic and by randomize is found in chest x-ray (2). Myasthenia gravis is an autoimmune dis- ease that is a neuromuscular transport junction disorder due to AB against acetylcholine receptors in muscles (3). Approximately 10-67% of 100 pa- tients with thymoma have myasthenia gravis; how- ever, 10-15% of patients with myasthenia gravis have thymoma even which in cases with normal thymus, thymectomy improves symptoms (4). Thymoma is usually indolent but if it spreads, it is implanted in the pleural space which causes pleural plaques, diaphragmatic tumor and malignant pleu- ral effusion (1). Thymoma is very sensitive to chemotherapy and clinical response was seen in 2/3 of the patients. Best used is as neoadjuvant that prepare the patient for complete resection. In addition, the use of octerotide and high-dose corti- costeroids is effective. Currently, the best treatment is MULTI MODAL that means chemotherapy before surgery and then radiation after surgery (5). In a study conducted by Eric A. Engels et al., of 849 pa- tients, 455 men were and 394 were women (6, 7). In the study conducted by Andre J. et al., the 5-year survival rate was 94%, while 10-year survival was 90 % (8). As well as, in the study conducted by Kristen Bass Wilkins et al., the 5-year survival rate was equivalent to 87%, 10-year survival rate equivalent to 84% and 20-year survival rate was equivalent to 80% (9). In Stefano Margaritora et al.'s study 5, 10, 20, 30 and 35 year survival rates were equivalent to 89.9%, 84.1%, 73%, 58.6% and 58.6%, respectively (10). In another study conducted by Kazou Nak- agawa et al., 5-year survival was 92% and 10-year survival was equivalent to 91% (11). In a further study conducted by BS Singhal et al., out of a total of 836 patients, 611 were men and 225 women. As well as, in this study, the age decade of patients with myasthenia gravis was documented for 60-70 years (12).

Materials and Methods

A retrospective, cross-sectional study was de- signed to investigate the patients with thymoma tumor attending the Department of Radiotherapy

and Oncology, Ahvaz Golestan Hospital for the duration of 2001-2011years. For this study, all me- diastinal tumor cases were considered and among them there were 26 patients with thymoma, who their data were extracted and studied. Based on age, sex, metastasis, invasive or non-invasive, My- asthenia Gravis and last visit a checklist was pro- vided for each patient. The details of each patient were recorded on checklists after thorough exami- nation of each case. As well as obtaining infor- mation on the latest status of the patient (the pa- tient's survival) a phone call was given to the pa- tients' family. To investigate and describe the de- sired variables, the obtained data were analyzed using the methods of descriptive statistics includ- ing frequency tables, graphs, and numerical pa- rameters. Subsequently, the chi-square test was used to evaluate the relationship between varia- bles. SPSS was used for data analysis and level of statistical significance was considered as 0.05 for the above tests.

Results

Out of a total of 26 patients, 22 (84.6%) were males and 4 (15.4%) women (Figure 1). There was a maximum age of 76 and a minimum age of 21 years with a mean age of 45.38. The highest rate of tumor was indicated in 31-40 age and 41-50 years (30.8%). However, the lowest tumor rate was documented for the age decades of 71-80 years old with 7.7% (Figure 2). Out of 22 male patients, 16 (72.7%) had invasive thymoma and six cases (27.3%) had noninvasive thymoma. One out of four women (25%) had invasive thymoma and three patients (75%) had noninvasive thymoma (Figure 5). The majority rate of thymoma was observed in the range of 31-40 and 41-50 years old which was allo- cated a total number of 16 people. With 61.8% (Fig- ure 2) for 26 patients, seven cases (26.9%) had a myasthenia gravis that of this number, five cases (71.4%) had invasive thymoma and two people (28.6%) were noninvasive thymoma (Figure 3). Out of a total of seven patients with myasthenia gravis, five had invasive thymoma. In total, of the 26 pa- tients, 21 cases completed the study and stood alive; however, five patients had died due to inva- sive thymoma.

The rate of 3-year survival for all patients was equal to 87% and 95% confidence interval was equal to 1 and 0.695. Furthermore, 5-year survival rate for all patients was 71% and the 95% confi- dence interval was equivalent to 0.95 and 0.47 (Figure 4). However, 3-year survival rate for inva- sive tumors was achieved by 83.3% with confidence interval (1 and 0.62). Nonetheless, for 5-year sur- vival in the same tumor this rate was equivalent to a 70% with confidence interval (0.995 and 0.505)
(Figure 4).

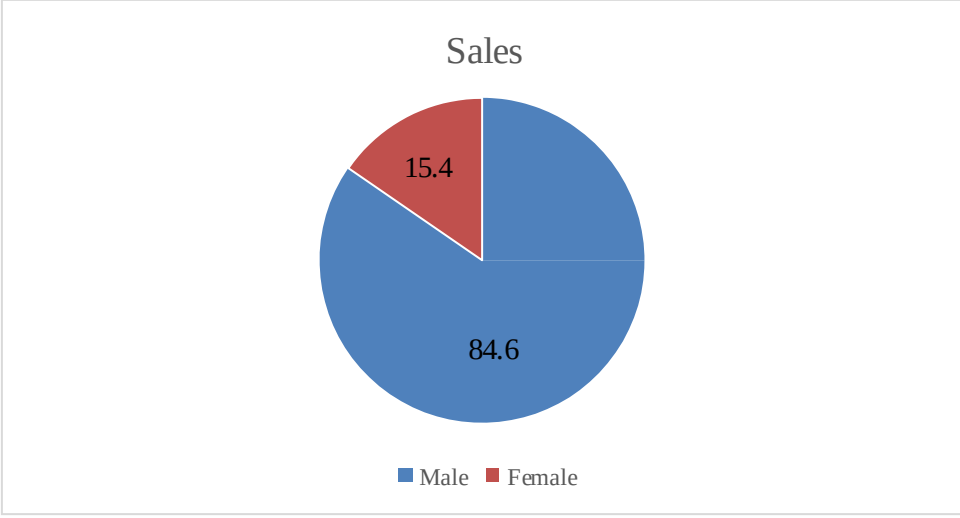

Figure 1: Sex distribution

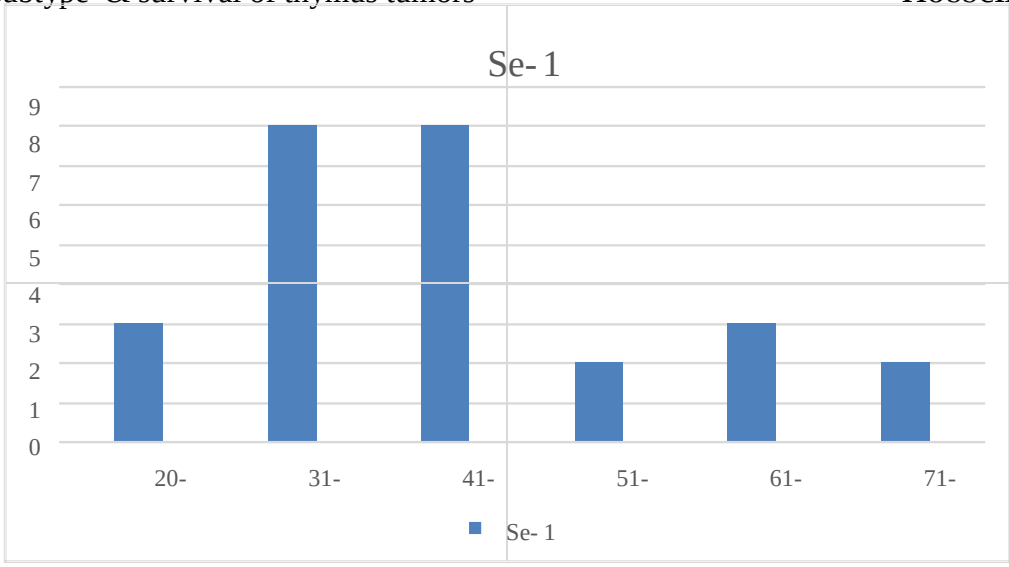

Figure 2: Frequency of patients in each age interval

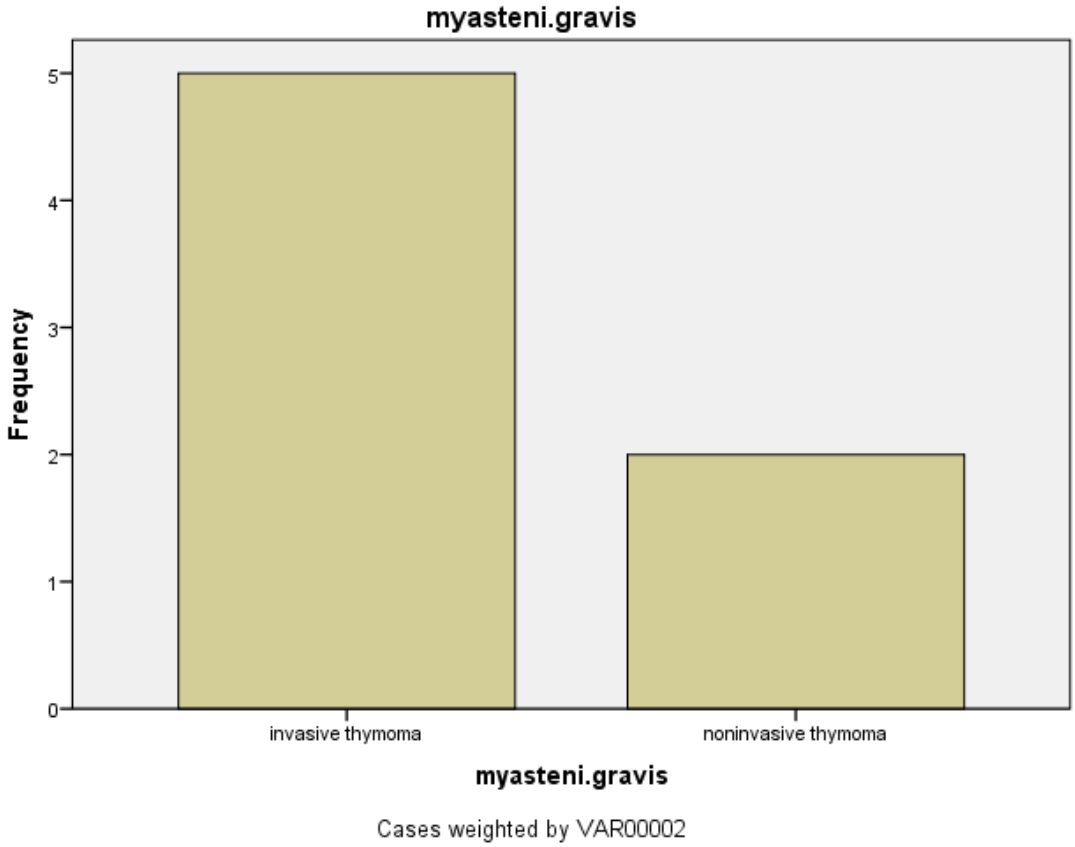

Figure 3: Incidence of invasive and non-invasive tumor in patients with myasthenia gravis

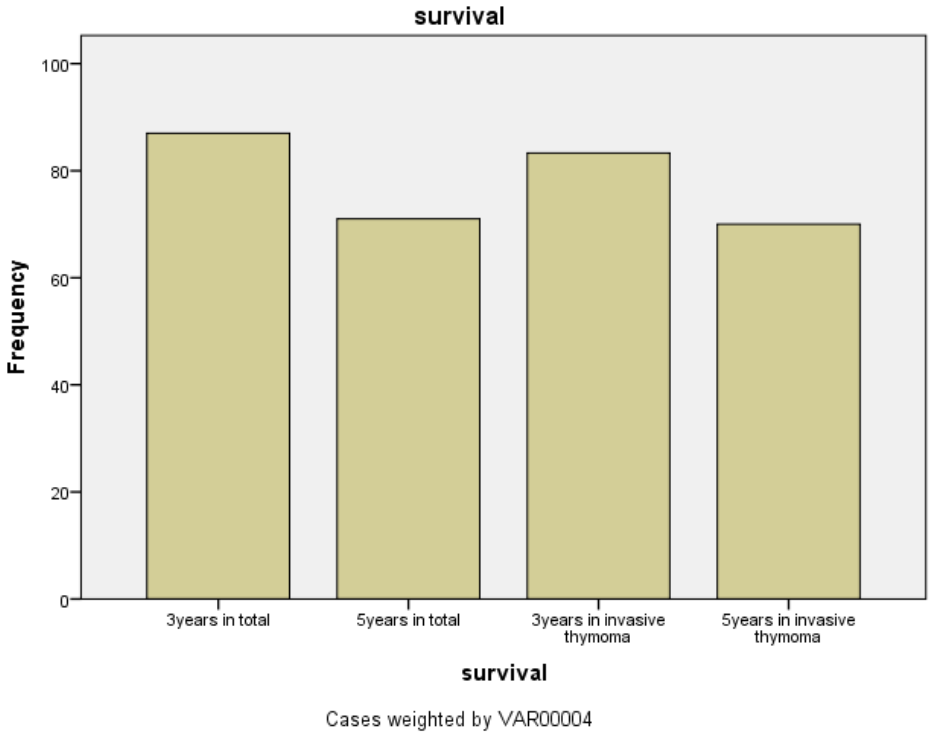

Figure 4: 3 and 5-year survival in all patients and survival of 3 and 5 years old with invasive tumors

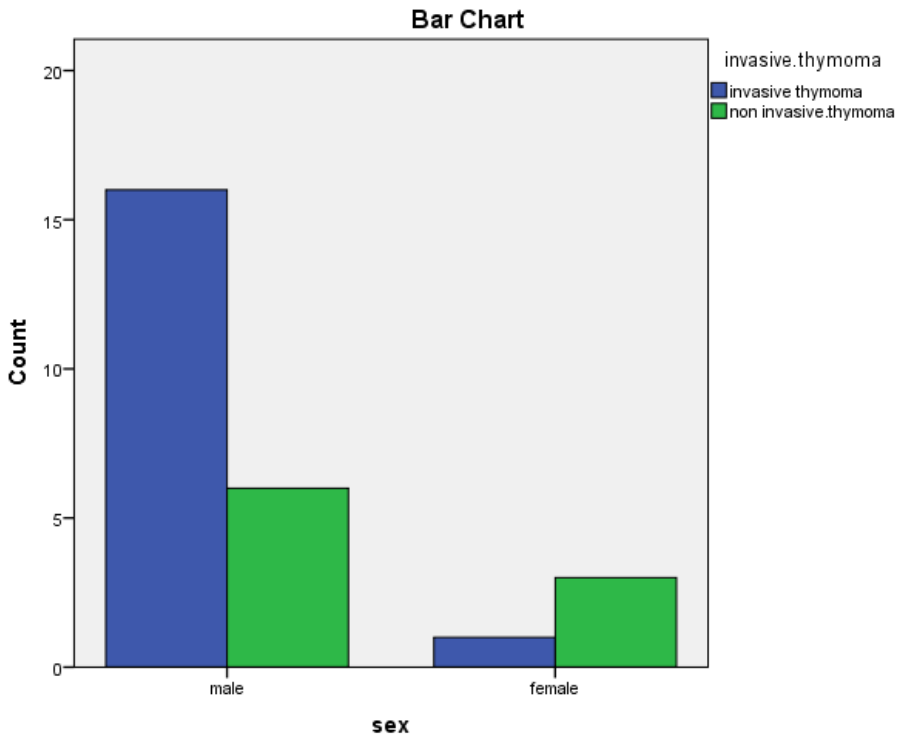

Figure 5: Frequency of male and female in terms of invasive and non-invasive tumor

Discussion

In this study, it was concluded that men with thymoma were more than women (5.5 to 1). Most patients were documented for the age range of 30- 50 and the mean age was 45.38 years. The age of patients was extended from 21 to 76 years old. In an article published by Eric A. Engels et al., a total number of 849 patients were studied and 455 men and 394 women (Male to female ratio of 1.15 to 1) reported in which from this point of view there was a significant difference in comparison with our study (6). In a study by BsSinghal et al., of 836 pa- tients, 611 were men and 225 were women, which was similar to our study in terms of the number of men than women (12). The most accompanied rate of Myasthenia Gravis with type of invasive thy- moma was seen in the fourth decade of age; how- ever, this rate was observed for ages of 50 to 60 in a study by Zhei Feng Mao et al. (7). In a study by Bs singhal et al., this rate also was seen in decades of 60-70 ages, which was compatible with our study (12). According to the present study, of total seven patients with myasthenia gravis, 5 had invasive thmoma. On the whole, of 26 patients studied, 21 patients were alive and completed the study; how- ever, five patients had died due to invasive thy- moma. The rates of 3-year survival for all patients confirmed at 87% and 95% confidence intervals were equal to 1, 0.695. Overall, the 5-year survival rates achieved at 71% and 95% confidence interval were equivalent to 0.95 and 0.47. In addition, the 3-year survival rate in invasive tumors with confi- dence interval (1, 0.62) was 83.3% as well as a 5- year survival rate in the same tumor was equiva- lent to a 70% and confidence interval (0.995 ± 0.505), respectively. In the research by J. Andrea et al. (8), the 5 year survival rate was equivalent to 94%, which compared with our study (71%) there was a significant difference ($p < 0.001$). Further- more, in the research by Kristen Bass Wilkins et al. (9), the 5 year survival rate of 87% was achieved, which compared with the current study (71%) there was a significant difference ($p = 0.02$). There was a significant relationship ($p < 0.001$) between the cur- rent study (71%) and Stefano Margaritora et al.'s study (89.9%) for the 5-year survival rate (10). In a study by Kazou Nakagawa et al. (11), 5-year surviv- al rate was documented in 92%, which in compari- son with our study (71%) there was a significant difference ($p < 0.001$). From a total number of 26 studied patients in the current study, seven pa- tients had myasthenia gravis with 26.9%, which in comparison with F. Ysl et al.'s' study with a total number of 39 patients who had myasthenia gravis and 15.7% there was a significant relationship (13).

Conclusion

The results of our study showed a significant relationship between invasive thymoma rate and developing myasthenia gravis. The 3-year and 5-year survival rate for all patients was equivalent to 83.3% and 71%, respectively. According to the study, most patients with invasive thymoma had a 5-year survival rate and also most of them had concomitant myasthenia gravis.

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Conflict of Interest

There is no conflict of interest to be declared.

Authors' contributions

All authors contributed to this project and article equally. All authors read and approved the final manuscript.

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