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Journal of Cancer Prevention & Current Research

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Thymoma: a retrospective review of 55 cases of thymoma treated at a regional cancer center

Abstract

We have reviewed the results of 55 consecutive cases of Thymoma treated at Kidwai Memorial Institute of Oncology in terms of surgical approach, removal of tumour with adequate clearance, the related complications, adjuvant treatment and the survival for the different stages of Thymoma.

Keywords: thymoma, median sternotomy, thoracotomy, thymectomy

Volume 2 Issue 1 - 2015

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Received: January 19, 2014 | **Published:** January 27, 2015

Abbreviations: TET, thymic epithelial tumors; SVC, superior vena vava; KMIO, Kidwai memorial institute of oncology

Mini review

Thymoma is the most common neoplasm of the anterior mediastinum, originates within the epithelial cells of the thymus.[1] Thymomas are typically slow-growing tumors that spread by local extension. Metastases are usually confined to the pleura, pericardium, or diaphragm, whereas extra thoracic metastases are uncommon. The most widely used staging system for thymomas is Masaoka and recently by WHO staging, both were included in our studies. Surgery remains the mainstay of treatment regardless of stage for all thymic neoplasms (16). Blalock described removal of the thymus initially in 1941.[2,3] The preferred surgical approach is median sternotomy with complete thymectomy.[4-10] Complete thymectomy is favored even in cases of only partial thymic gland involvement because of reports of improved survival and multifocal thymoma. 40% of the cases invade surrounding structures which may limit the ability to achieve R0 margins.[2] In advanced tumors, especially if the lung or pleural space is invaded, the extension of a sternotomy to a hemi clamshell incision or a full clamshell incision can be suitable. The oncologic equivalency of thoracoscopic and robotic assisted approaches has been reported, so long as capsule integrity has been maintained and tumour seeding has been prevented.[11-14] Masaoka stages III and IV, histological types B2, B3, and C, and incomplete resection were independent risk factors for poor prognosis. Complete resection was feasible in all early stage TETs in our patients. The goals of surgery were achieved safely with very few serious complications and no surgical deaths. Completeness of resection is the most commonly cited statistically significant prognostic factor in thymoma. Our experience also proves that both the WHO criteria and the modified Masaoka staging are prognostic factors of TETs. Long-term disease-specific survival can be expected not only after surgery for early stage thymoma but also after surgery for advanced disease and also including histopathology sub types.

Aim

To investigate the role of surgery in the management of thymomas and investigate prognostic indicators after surgery for thymoma.

Discussion

We retrospectively reviewed 55 thymic epithelial tumors diagnosed during the period of 1998 to 2008 at our (KMIO) institute. 55 patients were diagnosed as thymoma, 50 patients were include in our study, 5 patients were determined to have either World Health Organization type C disease or Masaoka stage IV-B disease and were excluded from analysis were examined the histological specimens using the current World Health Organization classification. Patient characteristics, surgical procedures, and postoperative courses were studied. Staging was performed according to the modified Masaoka system based on surgical and pathological findings; all the histological specimens were reexamined using the current WHO criteria for TET classification for the purpose of the study. Preoperative workup included a complete history and physical examination, laboratory tests, chest roentgenogram, computed tomographic scan. Our strategy for clinically suspected TET patients without any clinical evidence of dissemination was surgery oriented (i.e., surgical exploration for histological diagnosis and potential resection). The surgical procedure consisted of a total thymectomy, together with excision of invaded tissue when possible, through a median sternotomy or a thoracotomy based on the tumor location. Patients were operated on with every effort to remove the tumor. If complete resection was not feasible, then a partial resection (debulking) was carried out. When even a debulking was difficult, the procedure turned into a mere biopsy. Surgical specimens were further examined by our pathologists to determine the histology as well as the margins of resection. The most common surgical approach was sternotomy, which was utilized in 32(64%) patients in our series. In addition to total thymectomy, 4 of our patients additionally had partial pleurectomy, wedge resections of lung & lobectomy.

Result

i. Demographic characteristics of the 50 patients included the following (Table 1).

ii. The majority of patients in our series were female 61% (n = 31)

iii. Overall average age of patients was 51.0 years.

iv. 15(30%) patients were associated with myasthenia gravis.

Table 1 Demographic characteristics of the 50 patients

Cough	17
Dyspnea	12
Incidental/asymptomatic	10
Chest pain	8
SVC obstruction	3

Conclusion

a. Surgery remains the mainstay of treatment regardless of stage for all thymic neoplasms (16). Blalock described removal of the thymus initially in 1941.[3]

b. The preferred surgical approach is median sternotomy with complete thymectomy.[4-7-10]

c. Complete thymectomy is favoured even in cases of only partial thymic gland involvement because of reports of improved survival and multifocal thymoma.

d. 40% of the cases invade surrounding structures which may limit the ability to achieve R0 margins (2).

e. In advanced tumors, especially if the lung or pleural space is invaded, the extension of a sternotomy to a hemi clamshell incision or a full clamshell incision can be suitable.

f. The oncologic equivalency of thoracoscopic and robotic assisted approaches has been reported, so long as capsule integrity has been maintained and tumour seeding has been prevented (11-14).

g. Masaoka stages III and IV, histological types B2, B3, and C, and incomplete resection were independent risk factors for poor prognosis (Table 2). Complete resection was feasible in all early stage TETs in our patients (Table 3). The goals of surgery were achieved safely with very few serious complications and no surgical deaths (Table 4). Completeness of resection is the most commonly cited statistically significant prognostic factor in thymoma. Our experience also proves that both the WHO criteria and the modified Masaoka staging are prognostic factors of TETs. Long-term disease-specific survival can be expected not only after surgery for early stage thymoma but also after surgery for advanced disease and also including histopathological sub types (Table 5 & 6).

Table 2 Results showing Masoka stage

Masoka Stage	Number of Patients
Stage I	22 (44%)
Stage 2	16 (32%)
Stage 3	07 (14%)
Stage 4-A	05 (10%)

Table 3 Showing resection rates

Completely Resected		35	
Partially Resected		11	
Biopsy Only		4	
	Completely Resected	**Partially Resected**	**Biopsy**
	35	11	4
Stage I	20	2	-
Stage 2	11	5	-

Table continued...

Completely Resected		35	
Partially Resected		11	
Biopsy Only		4	
	Completely Resected	**Partially Resected**	**Biopsy**
Stage 3	3	4	0
Stage 4	1	0	4

a. The complete resection rate of stages I and II tumors was significantly higher than stages III and IV tumors (88.57% vs. 11.43 %).

b. There were significantly more stage I and stage II cases in histological types A, AB, and B1 tumors than in B2, B3 tumors (76% vs. 24%,) and their complete resection rate was significantly higher than the latter group (90.91% vs. 9.09%).

Table 4 Morbidity and Mortality

Post Op Complications	**8 Patients**
Myasthenic Crisis	4
Respiratory Failure	2
Pneumonia	2
Mortality	**2 Patients**
Myasthenic Crisis	1
Cardiac Arrest	1

Table 5 Adjuvant treatment

Incompletely Resected	15
Patients Underwent Rt	18
Completed Rt	6
Partial Response/ On Follow Up	4
Non Responders	2

Table 6 After a mean follow-up of 60 months

Patient Alive	33(66 %)
Patient Died	8 (16%)
Not Able to Contact	9 (18%)

*Five yrs survival was 66%.

Acknowledgments

None.

Conflicts of interest

Authors declare that there is no conflict of interest.

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Citation: Arjunan R, Kurpad V, Vimalathithan V, et al. Thymoma: a retrospective review of 55 cases of thymoma treated at a regional cancer center. *J Cancer Prev Curr Res.* 2015;2(1):8–10. DOI: 10.15406/jcpcr.2015.02.00025