

Current status of mediastinal tumors*

Keizo Yoshimura M. D.

Dr. Lee Dr. Yu, Dr. Kim and Chairman, members and guests.

It is my great pleasure to be here to present current current status and our own experiences on surgical treatment of mediastinal tumors in Japan at this Congress.

During the past 25 years, 312 patients with mediastinal tumors were treated at the Department of Thoracic Surgery, Tokyo University Hospital.

As a recent trend in Japan, more and more case with mediastinal tumors are surgically treated.

As next slide shows, number of cases collected at 1971 is about 4000, which is 4 times as much as that collected 7 years before. In this survey, approximately 30% of tumors were proved to be malignant.

This slide shows a collected survey of mediastinal tumors, that includes reports from 10 institutes. Here it is again recognized that the incidence of malignant cases is 28% or so.

Next slide shows the classification and incidence mediastinal tumors cited from two reports, one from a collected review in Japan, another from a paper of HEIMBURGER.

As you can see in this Japanese survey, there are various types of tumors. The commonest type is the teratoid and the second in frequency is the thymic tumor. These

two types occupy about half of all tumors.

The third is the neurogenic tumor. Cysts and another types are not so common the Japanese survey.

In contrast, in the United States and Europe, the neurogenic tumor is the most frequently encountered type, next being the congenital cysts. The teratoid and thymic tumor is the less common among these four.

At first, I will talk about our method of examination, In cases with suggestive mediastinal tumor, it is necessary to take chest X-Ray films which are composed of 4 directions plane film and tomography. Various graphic examinations as listed in this slide performed in selected cases.

In pneumomediastinography, we usually use substernal direct approach, although many other methods as shown in this slide have been advocated by other investigators.

Next slide shows schema of pneumomediastinum. White parts indicate those filled with oxygen gas of approximately 1000 ml.

Next slide shows needle to be used in this study and actual scene of the procedure.

Next slide shows a film of a case with benign thymoma.

Next 2 slides are plane film and tomographic film after injection of gas into the mediastinum. By these 3 films you can recognize the position and nature of the tumor.

This slide is a plain film of a case with an aneurysm of the descending aorta which was diagnosed with an aortogram as shown

* Dept. of Surgery of Hamamatsu Medical University in Japan

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in the next slide.

Superior vena cavogram as reproduced in this slide reveals an obstruction of the superior vena cava and marked development of collaterals resulting from a malignant mass in the mediastinum.

It may be necessary to obtain a bronchogram in order to make a differential diagnosis from a mass originated in the lung.

It has been well known that in mediastinal tumors suggestive diagnosis is possible based only on the location of the tumors.

This is a classification of parts of the mediastinum that we commonly use.

The distribution of our cases in terms of the location in the mediastinum is summarized in this slide.

As you can see, teratoid tumors and thymic tumors were located in the anterior mediastinum with a exception of 3 cases which occupied the posterior mediastinum.

Neurogenic tumors originated from the posterior mediastinum in 36 out of 44 cases. Most of thyroid tumor were seen in the superior mediastinum. A fair number of lymphnode tumors were found in the middle mediastinum.

Regarding subjective symptoms, 70% of cases with benign tumors remained asymptomatic, whereas 88% of patients with malignant tumors were associated with various symptoms.

Symptoms and signs most frequently seen, were PAIN, COUGH, PALPITATION, and so forth.

we can divide these signs and symptoms into three. These are compression, general and special symptoms and signs as myasthenic syndroms.

It is convenient to divide the compression symptoms into three subgroups The are

respiratory, circulatory, and nervous systems, as shown in this slide.

It is a matter of current dispute how to treat patients with malignant mediastinal tumors. In our series, the curative operation was performed in the percentage rate as shown in this slide.

The overall rate of resection was 37.5% which is high. Those that could not be completely extirpated were most frequently seen in group of teratoid and lymphnode tumors.

Therefore lymph node tumors are conservatively treated especially by means of chemotherapy.

(TETATOID)

I would like to proceed with treatment of individual type of tumors.

Most common type of tumors in our series is teratomas in 91 cases, 11 of which are malignant.

Almost all tumors were located in the anterior mediastinum except three. Ten cases of 11 malignant teratomas were male. Most of benign teratomas were cystic.

Most of malignant teratomas were solid, necrotic, or hemorrhagic.

As to the surgical treatment of mediastinal teratoma, 80 benign tumors were successfully resected without recurrence, whereas only three out of 11 malignant tumors could be extirpated.

Prognosis of malignant teratoma was extremely poor, irrespective of combined treatment of irradiation with chemotherapy. All 11 cases died within one' year after diagnosis or operation.

I would like to presenta few cases with teratoma.

S. 1 This film is that of a case with a huge teratoma occupying about a half of the thoracic cavity. Displabement of the Sup-

erior Vena Cava was seen, although the tumor was benign in nature.

- S. 2 In this slide you can see dental structure within the shadow of the teratoma.
- S. 3 This demonstrates a resected specimen placed on the mass shadow in the chest x-ray film.
- S. 4 You can see a tooth in the specimen.
- S. 5 Here is hair in the specimen.
- S. 6 Thymic tissue was found microscopically.
- S. 7 Embryonal tissue revealed in this case.
- S. 8 In this specimen, you can see cartilage, mucous gland and epithelium.
- S. 9 You can also see digestive glandular structures in the specimen.
- S.10 Gastric mucosa was found in the case.

As has been illustrated in the several slides, these teratomas include three germ layers, They are most intimately related to the thymus tissue.

Accordingly, we believe that these tumors should be designated as teratoma of thymic origin, The alternative name of this type of tumor has been dermoid cyst.

(THYMUS)

Now I would like to talk about Thymic tumors.

The thymic tumors as shown in previous slide, contain various pathological elements. Thymoma is most important and interesting tumor observed in Mediastinum. It has many problems to be clarified. 5 cases of seminomatous thymomas and 2 carcinoid-like tumors are also included in this table as a variant type of thymoma.

When symptoms are compared between localized and infiltrative types of thymomas, it was apparent that the former remained asymptomatic in most of cases, whereas most of cases, whereas most of the latter were

associated with various compression symptoms.

However. it is to be noted that specific complications such as myasthenia gravis or anemia is more commonly encountered in the former type of thymoma.

Among 64 operated cases, twenty-eight tumors showed invasive growth, of which 5 showed pleural implantation, and regional lymphnode involvement were seen in 10 cases. In this group, superior venacaval syndrome is often observed. On the contrary 36 cases were well encapsulated and showed no invasion.

As to the histological classification of thymomas, there are various opinions. We classified our cases to 5 groups as this slide shows. In our series spindle cell type and lymphocytic type showed less invasive, relatively benign, but epithelial cell type thymoma showed more invasive and of malignant character.

In our series, we have experienced 14 cases of myasthenia gravis, one case of pure red cell anemia, and one of Cushing's Syndrome.

This slide shows the resectability of thymomas we have experienced, 45 cases out of 67 tumors were able to extirpated, approximately two thirds. In the tumors well encapsulated, all cases were resectable, but on the contrary, 9 out of 31 tumors of invasive group were resectable, only about 30 % of resectability.

As to the follow-up study of the patients with thymoma, the prognosis of each groups showed variable courses. In the cases well encapsulated and resected, 5 recurrences of tumors occurred, of which three died. And the cases with associated complications had also poor prognosis. The prognosis of the cases with invasive thymoma were very

poor, especially in non-resectable ones. But there were a few long survived cases who showed remarkable effect by irradiation therapy.

This slide indicates 10 year follow-up study of cure rates of myasthenic gravis after thymectomy reported from Osaka University.

As you see, the cure rate of M.G. is higher in patients with thymectomy than in those without thymectomy.

These series, however, include cases without apparent thymoma.

(NEUROGENIC)

We have experienced 49 cases with neurogenic tumors, and classified as this slide shows. 31 cases with tumor of nerve sheath origin were observed in the adult. On the contrary 18 cases with tumor of sympathetic nervous system were observed in the younger people, as slide shows. This tendency is the same as is reported elsewhere in the world.

Forty-three cases out of 49 Neurogenic tumors were proved to be benign histologically, and all these cases were resectable and cured except 2. These 2 cases died several years after operation due to recurrence of tumor, which were complicated with Von Recklinghausen's disease. Two cases out of 6 malignant neurogenic tumor, are alive and well several years after operation, but other 4 cases died due to tumor.

(OTHER TUMOR)

This slide shows other mediastinal tumors relatively frequently observed. Congenital cysts and thyroid tumors were able to be resected without difficulty, but many of

malignant lymphoma had no indication of surgical treatment.

(CASE REPORT)

This 18 year old female was found to have lung abscess. She suffered from pneumonia three times before admission before admission.

At the time of admission to this hospital, there were two abnormal mass shadows in the right upper lung field. Preoperative diagnosis was lung abscess. She underwent right upper lobectomy.

As shown in this slide, there were enterogenic cyst and bronchogenic cyst in the lung, which had been infected.

Postoperative course was uneventful.

(CONCLUSION)

Benign mediastinal tumors are completely resectable with minimal risk. However, operative results are poor in patients with malignant tumor, particularly when is accompanied with superior vena caval syndrome. Our current method of preference is preoperative irradiation for improvement of symptom and reduction in the size of tumor. Nevertheless, there are many difficulties to be solved in the treatment of malignant teratoma, and thymoma, Especially these tumor with various complications. Improvement of therapeutic results are now being expected.

I should like to express my heartfelt thanks for Dr. Yu, Dr. Lee, and members of the Society to offer me an opportunity to speak this presentation.

I hope this presentation would be of any help for members of the Society. Thank you.