Thymoma is a rare neoplasm of thymic epithelial cells that has the ability to spread by local extension. While metastases are most commonly confined to the pleura, pericardium and diaphragm, cases of abdominal metastases have been reported. In a recent publication [7], we conducted a SEER database and literature review to identify cases of malignant thymoma (MT) and abdominal metastases, demonstrating an increasing overall incidence of MT with a significant male predominance. Additionally, we suggested routine screening for all MT patients as roughly 50% of abdominal metastasis cases presented as asymptomatic, as well as a multimodal treatment approach for those with metastatic MT to the abdomen. In this highlight, we briefly present the evidence for a rising rate of MT, review reported cases of abdominal metastasis, and emphasize the need for a multimodal treatment approach.

Keywords: Thymoma; extrathoracic metastasis; multimodal treatment; incidence

**Introduction**

Occurring in 0.15 of 100,000 persons/year [1], thymoma’s account for roughly 40% of all mediastinal tumors [2]. Abdominal metastases are extremely rare with the most common courses of spread being lymphatic and hematogenous [3]. In our recently published study, we extrapolated 2724 cases of malignant thymoma over a span of 60 years, with an incidence increasing from 17 cases in 1973 to 90 cases in 2008. We also found an increased incidence rate in males of 0.23, which was significantly higher than the 0.17 incidence rate seen in females (p=0.0002). A potential explanation for this gender incidence rate disparity was provided by Engels et al. [4], who suggested an increased prevalence of occupational exposure in males as opposed to females. However, the epidemiological data associating risk factors and genetic predispositions to thymoma are limited.

Of the total number of malignant thymoma cases found, 25 (0.92%) presented with extrathoracic metastasis to the abdomen, 13 of which were asymptomatic (46%). Abdominal pain was the most frequent symptom seen in those who were symptomatic.
While evidence for the best clinical practice in MT treatment is limited \[2\], our review demonstrated a noteworthy variation in treatment strategies encompassing surgery, chemotherapy, and radiation. Of the cases presenting with abdominal metastasis, the most commonly used treatment modality was a combination of all three. Half of the patients treated with this multimodal approach exhibited symptoms, and the group as a whole exhibited an average disease-free interval (DFI) of 59.9 months and an average survival time from metastasis to death of 28.3 months. The highest average DFI and survival times of 156 months and 471 months respectively were seen in two patients who received only radiotherapy. Neither of those patients were symptomatic.

Although tumor resection is typically the chief goal in thymoma treatment as in other carcinomas, we demonstrated thymoma sensitivity to chemotherapy and radiation \[5\]. While radiation therapy has achieved high survival rates as we saw in the two patients with the highest DFI and survival time, this treatment modality has been shown to be less effective if not proceeded by complete tumor resection. We found that a combination of the therapies including pre-operative chemotherapy followed by post-operative radiotherapy could increase complete resection rate and potentially improve patient survival time \[6\].

**Conclusion**

Due to the overall rising incidence of malignant thymoma and the observation that just under 50% of cases with abdominal metastasis are asymptomatic, we propose the need for routine screening for thymoma patients regardless of symptoms. Due to the patients in our review exhibiting a wide variety of disease-free intervals, there is no specific timeline regarding the length of continued screening in order to avoid recurrence.

Since other treatment modalities such as radiation and chemotherapy have not been shown to be curative, we concluded that surgery should remain the foundation for malignant thymoma treatment. However, because of the demonstrated success of a combination of all three therapies, we do propose the incorporation of a multimodal treatment method into the standard treatment plan of thymoma patients with abdominal metastasis. These findings expand our understanding of metastatic malignant thymoma and support the use of increased routine screenings and a multimodal treatment algorithm.

**Conflicting interests**

The authors have declared that no conflict of interests exist.

**Abbreviations**

MT: malignant thymoma; DFI: disease-free interval.

**References**