

CASE REPORT | VOLUME 79, ISSUE 1, P323-324, JANUARY 01, 2005

Seeding of Stage I Thymoma Into the Chest Wall 12 Years After Needle Biopsy

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Abstract

It is known that benign encapsulated thymoma can pursue an aggressive clinical course on rare occasions. It may recur locally, it may be invasive, or it may metastasize. We present a case of local seeding into the chest wall, presenting 12 years after core needle biopsy and complete excision of the mediastinal tumor. We draw attention to the malignant clinical behavior of some benign stage I thymomas.

Keywords

13

The introduction of needle biopsy into clinical practice has established its role in diagnosis of lesions located away from the body surface. The use of ultrasound scan or computed tomographic scan to guide the needle has further improved the accuracy of this procedure and reduced the frequency of its complications. However, the accuracy of the procedure in diagnosis of anterior mediastinal masses has been questioned. In addition, any long-term complications of this procedure are yet to be fully evaluated. This case highlights one of those long-term complications.

A 65-year-old man presented with a 2-month history of weight loss and malaise. A routine chest roentgenogram showed a large mediastinal mass, and a computed tomographic scan confirmed a 9-cm mass in the superior mediastinum to the left of midline. He underwent core biopsy with an 18-gauge Tru-cut needle (Allegiance Healthcare Corp, McGraw Park, IL); four passes were performed. The biopsy was performed through the third intercostal space to the left of the sternum. The smear showed only blood clots with lymphoid cells, but no tumor cells were identified.

The patient underwent excision of the mass through a median sternotomy. The tumor was found to be stage I Masaoka classification. Microscopic examination showed an encapsulated cortical thymoma with a thin fibrous capsule ([Fig 1A](#)). There was a well formed perivascular space containing lymphocytes with no evidence of vascular or capsular invasion. The patient recovered well from surgery. Early follow-up was entirely uneventful.



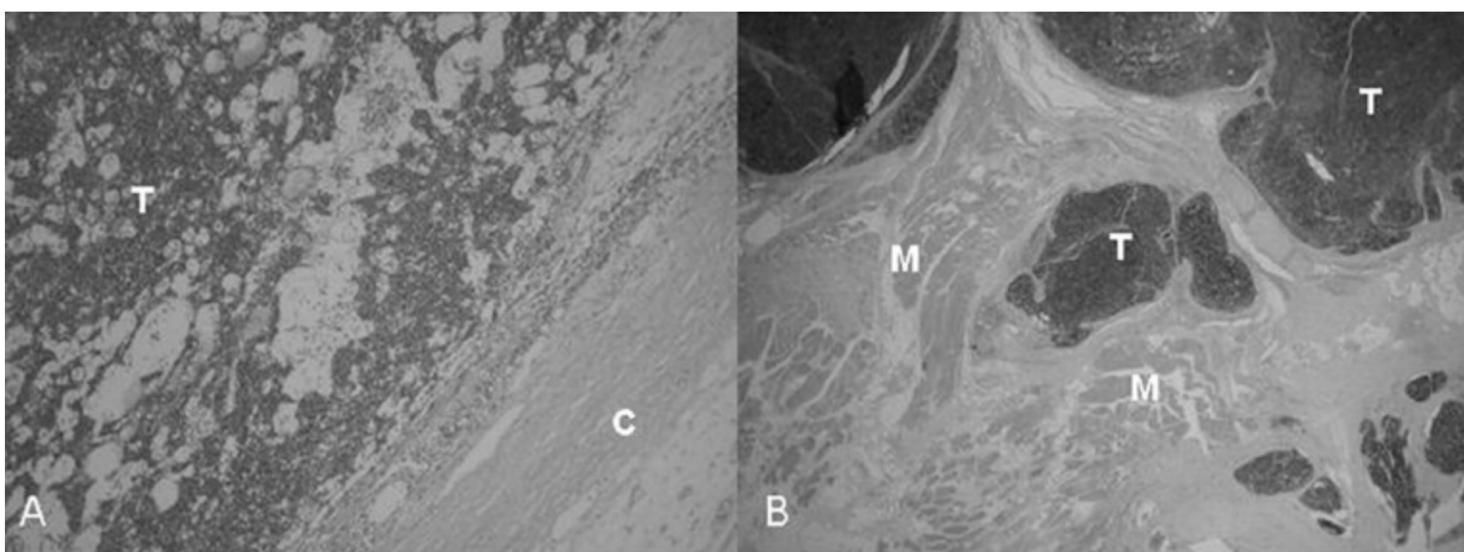


Fig 1 (A) Microscopic appearance of the thymic tumor removed at the first operation showing the tumor (T) and its capsule (C). (B) Microscopic appearance of the recurrent tumor removed from the chest wall (tumor islet [T] infiltrating intercostal muscles [M]).

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Twelve years later, the patient presented again with a slow growing mass in the left anterior chest wall. Clinically, the mass was found to be fixed to the chest wall. Magnetic resonance imaging revealed a 6-cm mass extending from the subcutaneous soft tissues through the chest wall and extending toward the left lung (Fig 2). Needle aspiration biopsy showed lymphoid cells with no atypical cells. However, the appearance was indistinguishable from thymic cells. The patient had resection of the mass en-block with part of the sternum and the anterior portions of three ribs (ie, the second, third, and fourth ribs). The chest wall was reconstructed using a ProLite mesh (Atrium Medical Corp, Hudson, NH) and bone cement as a sandwich. The patient made an uneventful postoperative recovery

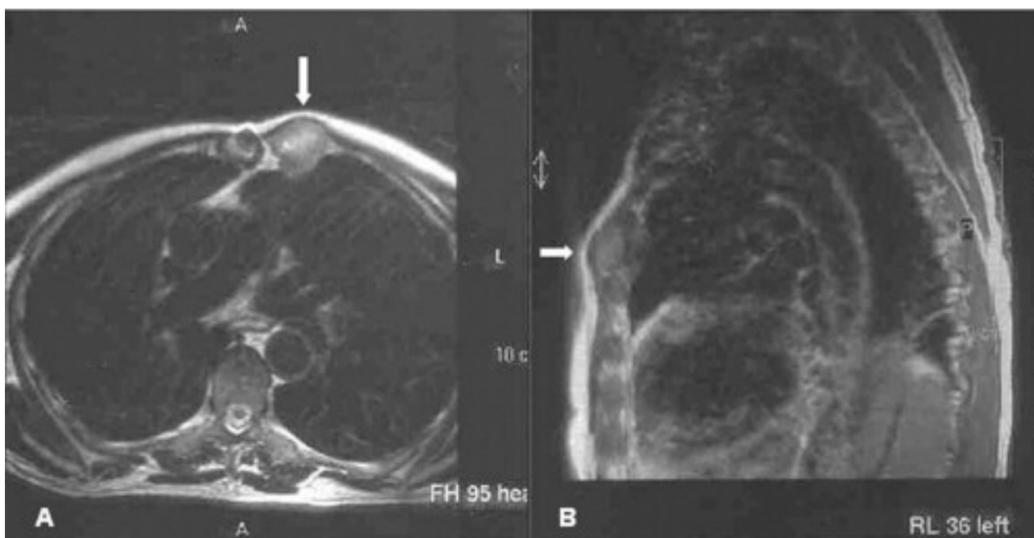


Fig 2 Chest wall magnetic resonance image demonstrating the recurrent tumor (A) (arrows) in cross-sectional view and (B) in sagittal view.

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Macroscopically the mass appeared to invade the intercostal muscles, extending into the intercostal cartilage. A thin capsule separated the tumor from the deep mediastinal structures. Microscopically, the tumor had the features of a cortical thymoma identical to the previous tumor (Fig 1B). There was no sign of capsular invasion. No significant pleomorphism was identified and mitotic activity was low.

Comment

Benign thymomas are known to recur. Many studies were conducted to classify benign thymomas and to predict their clinical course so that more appropriate treatments for more aggressive tumors could be instituted. Early observations demonstrated that neither intraoperative staging of the tumor on its own nor histologic classification alone could reliably predict the clinical behavior of these type of tumors.

Today, the clinical behavior of thymic tumors is determined by the combination of staging and histologic grading of the tumor [1, 2].

Late recurrence of stage I thymomas is well documented in the literature [3]. Indeed, cases of local recurrence have been reported decades after initial excision [4]. In addition, it is known that a thymoma could rarely seed into the chest wall after needle aspiration biopsy. However, this usually happens within a few months of the surgery.

One case of seeding was found in the literature with chest wall recurrence after chemotherapy. The tumor was found in the subcutaneous tissue at the site of the biopsy [5]. In our case, the recurrence of the tumor cannot be simply explained by local recurrence, as it was growing between the intercostal muscles, but was not invading the bone or mediastinal structures from which it was well isolated by a continuous fibrous capsule.

On the other hand, metastatic deposit is another possibility. Indeed there was one case reported of stage I tumor metastasizing into the pectoral muscle [6], and the cortical histologic picture of the original and of the recurrent tumor may predispose to this (grade B2, World Health Organization classification). However, finding the tumor at the previous site of fine needle aspiration biopsy track, where four tissue samples were taken from the tumor under computed tomography guidance is too much of a coincidence. In addition, intercostal muscles are not a common place for thymic metastases. There have been no previous reports. All this makes it more likely that the tumor originated from cells seeded into the chest wall during biopsy with progression over a period of 12 years. The question remains as to the need for such biopsies if the main mass is to be excised anyway.

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Article Info

Publication History

Accepted: August 13, 2003

Identification

DOI: <https://doi.org/10.1016/j.athoracsur.2003.08.004>

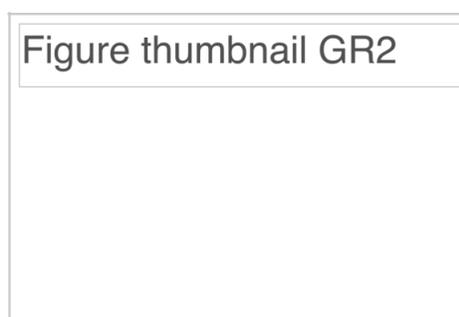
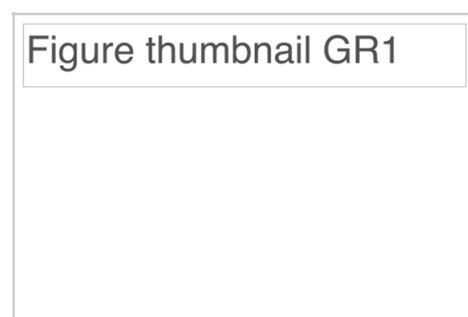
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