

# AB021. Histopathologic characteristics of resected thymic cyst walls, with imaging correlation

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**Background:** Thymic cysts can change in volume, CT attenuation, and MRI signal over time, raising possibility that spontaneous hemorrhage and resorption could contribute to these changes. A previous study showed some of their CT features to prompt misinterpretation as thymomas. We studied the pathological features of thymic cysts and correlated them with preoperative imaging findings.

**Methods:** The MGH Pathology archives were searched to identify thymic cyst resections between April 2000 and May 2020. Exclusion criteria included non-prevascular mediastinal localization, location within an enhancing mass (imaging), and/or presence of solid-cystic mass identified on gross examination. Cases without available imaging were also excluded. Various macroscopic/microscopic pathological parameters were evaluated and correlated with cyst imaging characteristics seen on CT or MRI performed closest to the time of surgery.

**Results:** Upon application of exclusion criteria, we identified 18 thymic cysts from the initial 84 mediastinal cystic specimens. The median age at resection was 60.5 with a range of 45–77 years. Most cysts were unilocular (11/18; 61%), with a gross maximum diameter ranging from 1.5 to 11.2 cm (mean  $\pm$  SD: 4.2 $\pm$ 2.7 cm). Microscopic review showed that most cysts had mixed patterns (8/16; 50%) of

cuboidal, flat, squamous and/or pseudostratified epithelia. Common findings included hemosiderin deposition in the cyst wall (5/18; 28%), calcifications (6/18; 33%), chronic inflammation (6/18; 33%), hyalinosis (11/18; 61%), and significant fibrosis (12/18; 67%). Other findings included cyst walls with denuded epithelium (6/18; 33%); adjacent cholesterol clefts (3/18; 17%); and granulation tissue (2/18; 11%). The adjacent thymic tissue was involuted in 16/18 (89%) cysts, and showed fat necrosis in 11/18 (61%), microcystic Hassall's corpuscles change in 4/18 (22%), lymphoid follicular hyperplasia in 3/18 (17%), and true thymic hyperplasia in 1/18 (6%). A total of 17/18 cysts were imaged by CT, and 4/18 imaged by MRI, including 3 imaged by CT. On CT, 6/17 (%) cysts demonstrated wall calcification, 11/17 (%) had attenuation values  $\geq$ 20 HU, and mean/median wall thickness on CT [solely perceivable and measurable in 5/17 (%)] was 3 mm/3 mm  $\pm$ 1.5 (1 SD). Of the 4 cysts imaged by MRI, three were T1-isointense and the other T1-hypointense to muscle.

**Conclusions:** Thymic cysts encompass a series of morphologically diverse lesions, which often show histological features suggestive of microbleeding, inflammation, and fibrosis, which may explain their variable CT and MRI appearance.

**Keywords:** Thymic-cyst; clinicopathological-features; hemorrhagic-cyst; thymoma

## Acknowledgments

*Funding:* None.

## Footnote

*Conflicts of Interest:* The authors have no conflicts of interest to declare.

*Ethical Statement:* The authors are accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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doi: 10.21037/med.2021.ab021

**Cite this abstract as:** Villalba JA, Louissaint A Jr, Haramati A, Ackman JB. Histopathologic characteristics of resected thymic cyst walls, with imaging correlation. *Mediastinum* 2021;5:AB021.