



Long term follow up results of the Thymic cyst diagnosed by chest MRI

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Background

Thymic cyst, exceedingly rare disease

Reported incidence: 0.01%, 1~4% of all mediastinal mass

Incidental finding increased during lung cancer screening

True incidence is ambiguous, can be underestimated

majority is benign, but need to differentiate from thymoma & thymic Ca.

some cases imply occult neoplastic process, spontaneous bleeding, compressive Symptom

Definite treatment is surgical resection, final diagnosis only through histologic examination





Recent studies

Several imaging modalities trying to distinguish thymic cyst specifically from others

Chest CT only, accuracy of less than 55%

Especially small lesion(<3cm) misdiagnosis is more common

PET, TTE, EUS can be useful in some cases, but not common & not clear evidence

Chest MRI is more widely used, and several recent papers back-up the clinical usefulness





Background

MRI findings suggesting thymic cyst

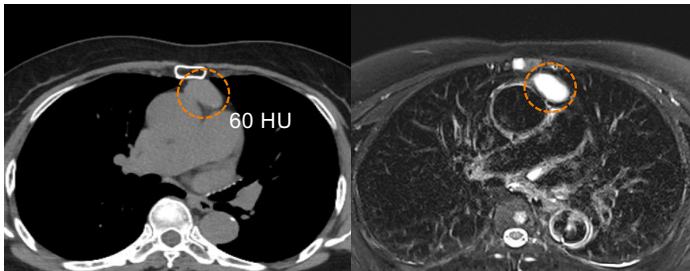
- Low signal on T1, high signal on T2(not sensitive)
- Deep learning fat suppressed T2 haste image: bright SI.
- Non-enhancement on post-contrast subtraction image
- No diffusion restriction on DWI and ADC map



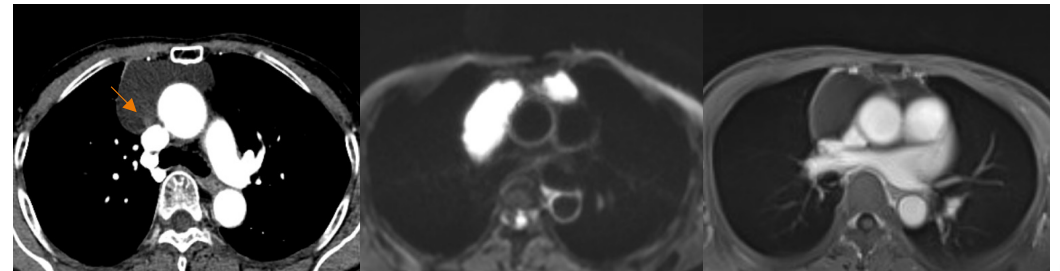
Background

- **MRI** is superior to CT
 - ✓ **Excellent contrast resolution**, especially differentiating cysts from tumors
 - ✓ Evaluating **tissue components**
 - **Chemical shift imaging**: microscopic fat (signal drop on out-of-phase)
 - **Fat-suppression technique**: macroscopic fat
 - **Diffusion-restriction image**: tissue cellularity (benign versus malignancy)
 - ✓ Evaluating **invasiveness** into adjacent structure
 - ✓ Limitation of CT in evaluating mediastinal cyst

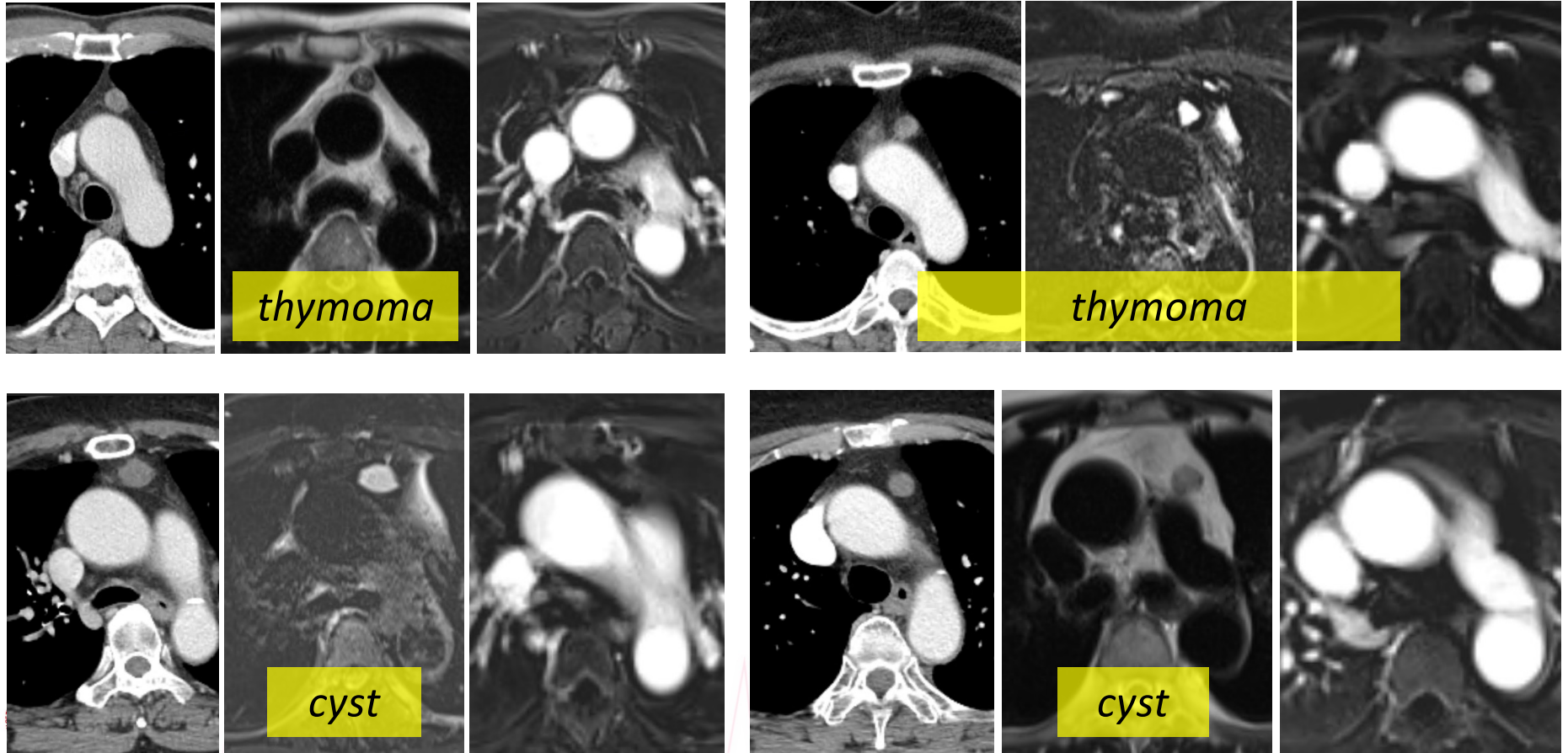
High-attenuation mimicking solid mass



Pseudoenhancement due to great vessel



CT vs MRI for thymic cysts



Background

Risk of malignancy is <1% vs operative complication occur 1 to 5%
So surgical Tx. Depends on Surgeon's judgement in asymptomatic cases

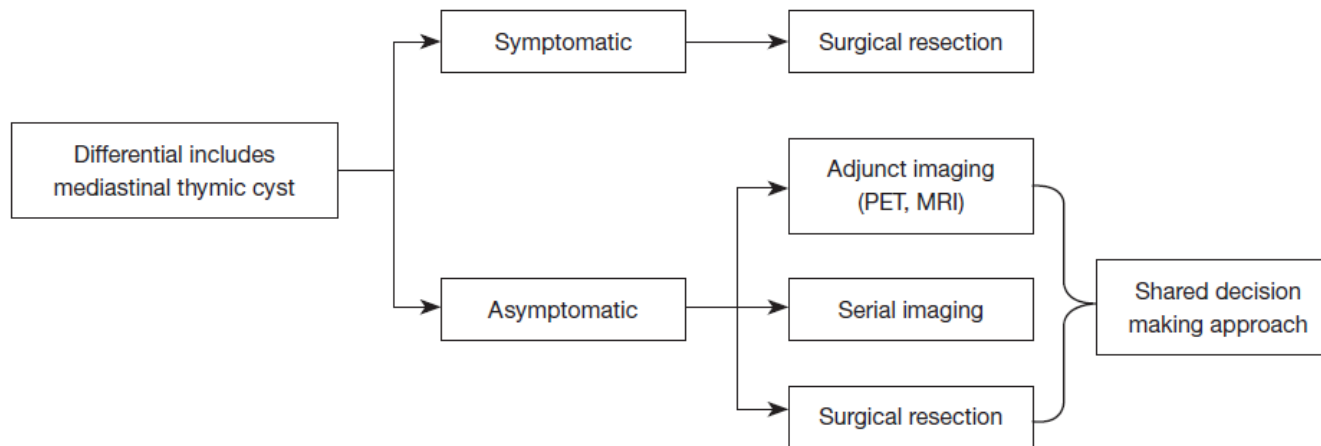


Figure 1 Treatment algorithm. PET, positron emission tomography; MRI, magnetic resonance imaging.

Cooley-Rieders K, Van Haren RM. Mediastinal thymic cysts: a narrative review. *Mediastinum* 2022;6:33.





Purpose of this study

Cystic anterior mediastinal mass

- Worry about unnecessary resection on cyst
- Fearing about malignant change
- Reliability of diagnostic accuracy of MRI
- Lack of Natural course of thymic cyst
- Establishment about surgical indication of thymic cyst



Method

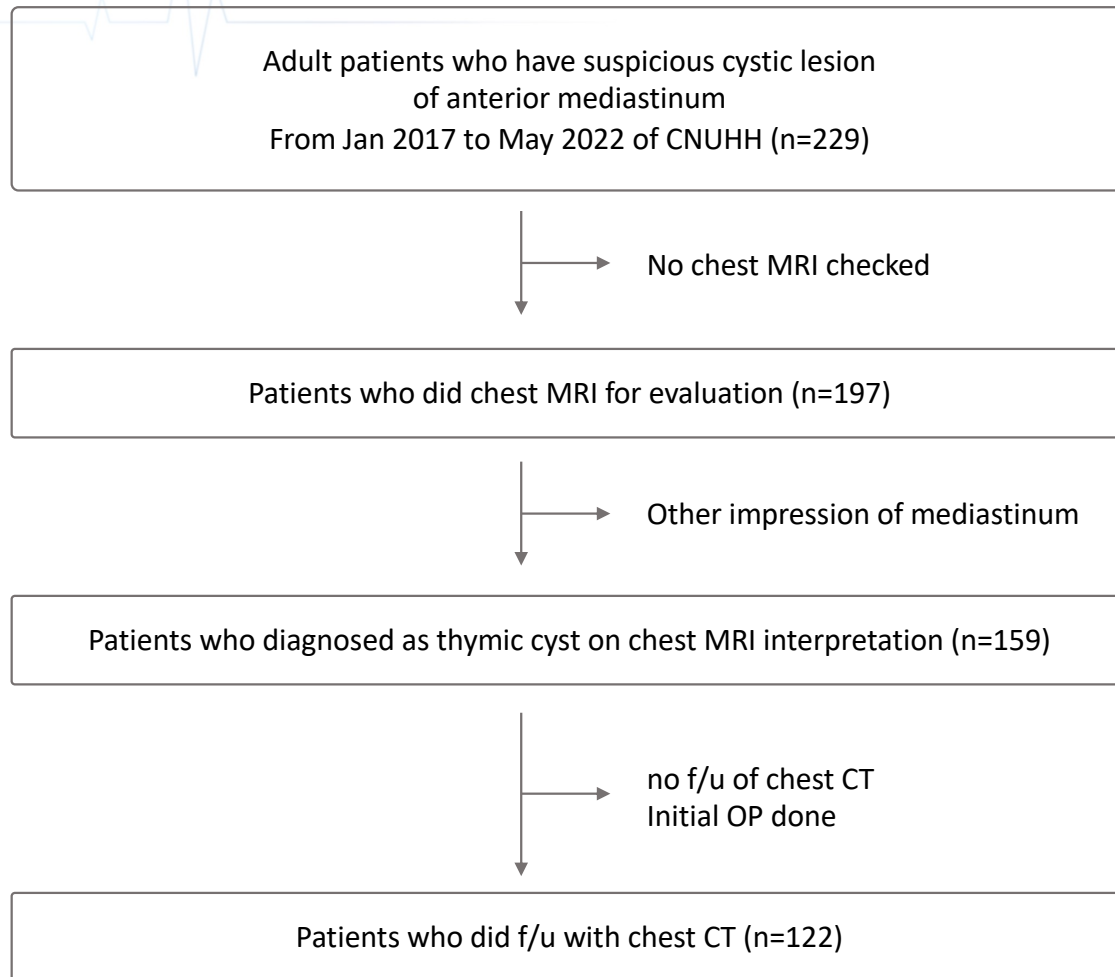
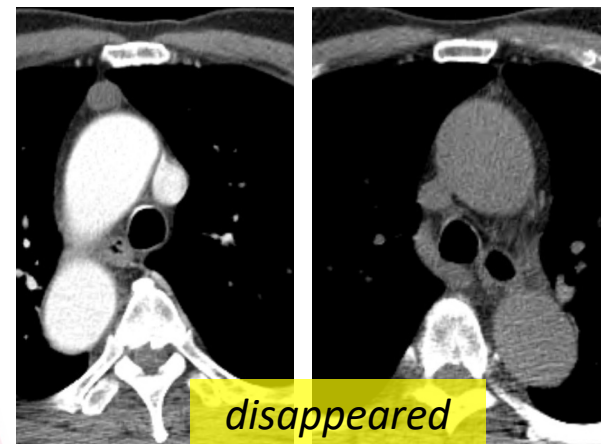
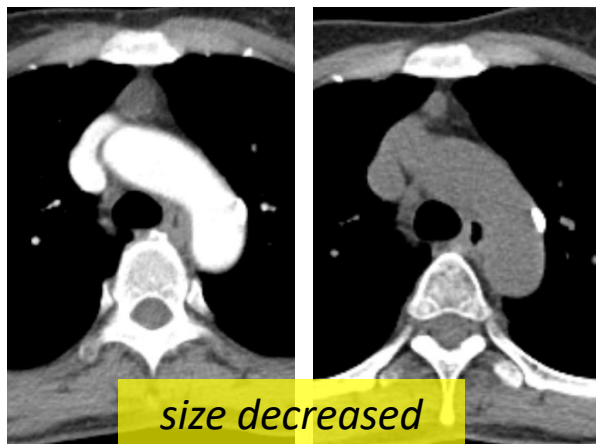
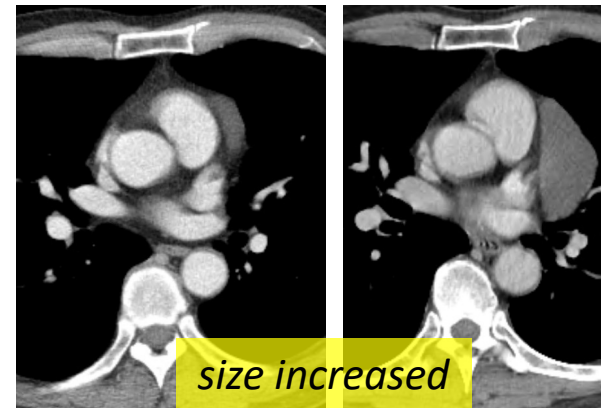
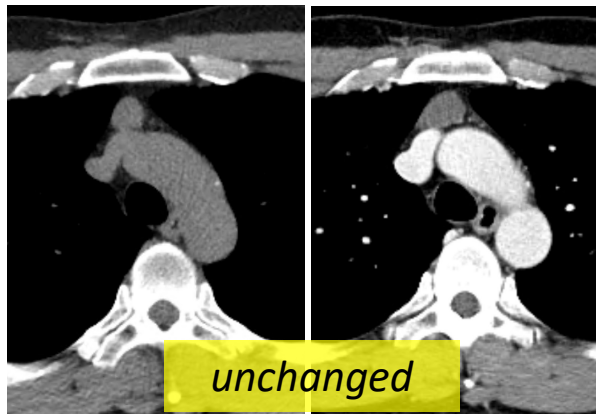


Fig1. Inclusion flowchart of the study population




Method

Categories of size change





Results



	Total (n=122)
Age, years (range)	61.6 (25-85)
Sex, N(%)	
Male	65 (53.3)
Female	57 (46.7)
Cyst size of first chest CT, mm (SD, range)	23.0 (\pm 16.3, 6-123)
F/U duration, months (range)	24.2 (3-65)

Table 1. Demographic characteristics of study population



Results

	Unchanged	Size increased	Size decreased	Disappeared	Total
N (%)	102 (83.6)	9 (7.4)	7 (5.7)	4 (3.3)	122 (100.0)
Age, years (range)	60.5 (25-85)	67.3 (57-78)	63.4 (53-76)	73.9 (70-76)	61.6 (25-85)
Cyst size, mm (SD, range)					
first chest CT	21.5 (\pm 14.7, 6-123)	27.6 (\pm 17.0, 8-47)	42.1 (\pm 30.0, 15-100)	24.8 (\pm 14.7, 6-123)	23.0 (\pm 16.3, 6-123)
last f/u chest CT	21.6 (\pm 15.7, 6-123)	38.0 (\pm 23.4, 12-67)	27.1 (\pm 18.0, 3-51)	-	22.4 (\pm 17.0, 0-123)
F/U duration, months (range)	22.8 (3-63)	38.8 (11-65)	27.1 (5-53)	15.75 (5-46)	24.2 (3-65)

Table 2. Characteristics comparison among categorized groups following lesion size change





Conclusions

- Size increasement is occurred only 7.4%(9/122).
- No one developed to malignant change during follow up.
- MR diagnosed thymic cyst can be followable by CT.
- MRI is useful for diagnosis of thymic mass.





Limitation & further study

Single center, relatively few cases

To confirm diagnostic value of MRI, histopathologic matching needed

MRI is still expensive & restricted accessible examination



Thanks for
attentions

