

VII CONGRESSO NAZIONALE ECOCARDIOCHIRURGIA

Programma preliminare
Atahotel Executive, Milano 5-7 maggio 2014

DIRETTORI
Antonio Mantero
Giuseppe Tarelli

anni di
**ECOCARDIO
CHIRURGIA** 2004 - 2014

 ECOCARDIOCHIRURGIA.it

RM CARDIACA: L'IMPIEGO NELLA PRATICA CLINICA

Moderatori: **Santo DelleGrottaglie** (Acerra, NA) - **Oscar Gaddi** (Reggio Emilia)

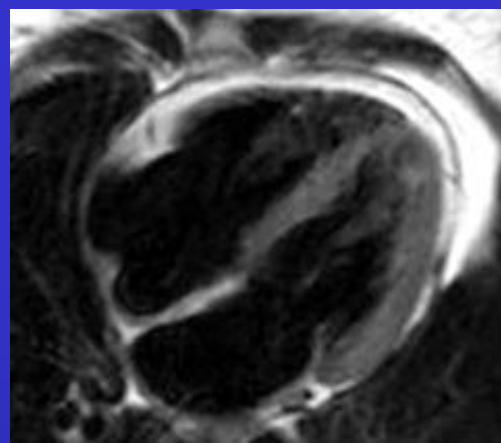
- 11.20 Pier Giorgio Masci** (Pisa) - Dolore toracico acuto associato a modifiche ECG e dismissione enzimatica, ma con angiografia coronarica negativa. *Il contributo della RM cardiaca nella definizione diagnostica e prognostica. I tratti distintivi tra sindrome coronarica acuta, miocardite e cardiomiopatie da stress.*
- 11.40 Gianluca Pontone** (Milano) - Le malattie delle valvole cardiache. *Quale è il ruolo della RM nella valutazione diagnostica e nella gestione dei pazienti con valvulopatia? I vantaggi ed i limiti rispetto a TEE e TC nella caratterizzazione pre-TAVI.*
- 12.00 Francesco De Cobelli** (Milano) - Le malattie del pericardio ed i tumori cardiaci. *Il contributo della RM nella definizione delle malattie del pericardio e delle loro implicazioni funzionali, anche in rapporto alle informazioni ricavabili alla TC. La caratterizzazione tissutale con RM nella valutazione delle masse intra- e para-cardiache.*
- 12.20 Patrizia Pedrotti** (Milano) - Le cardiopatie congenite in soggetti adulti. *Il ruolo della RM nella caratterizzazione anatomica e funzionale dei difetti cardiovascolari congeniti identificati in età adulta. Il contributo della RM cardiovascolare nella gestione di adulti operati in età pediatrica per cardiopatie congenite complesse.*

Francesco De Cobelli



Department of Radiology
Experimental Imaging Center
IRCCS Ospedale San Raffaele
Università Vita Salute
Milano

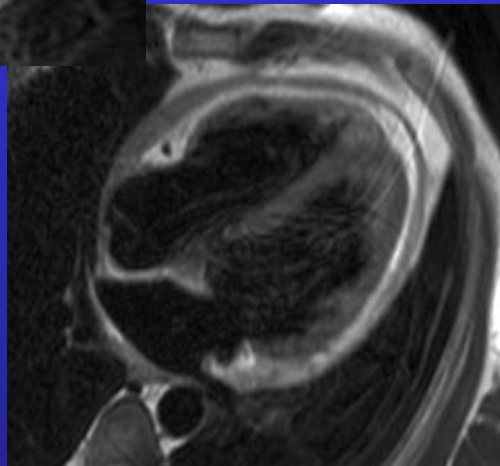




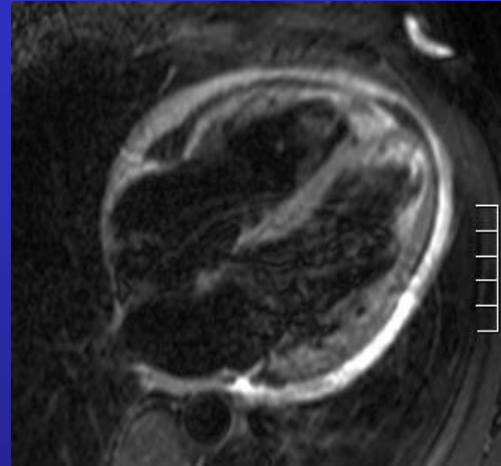
Pericardio normale

Linea spessore: 1-3 mm
ipointensa

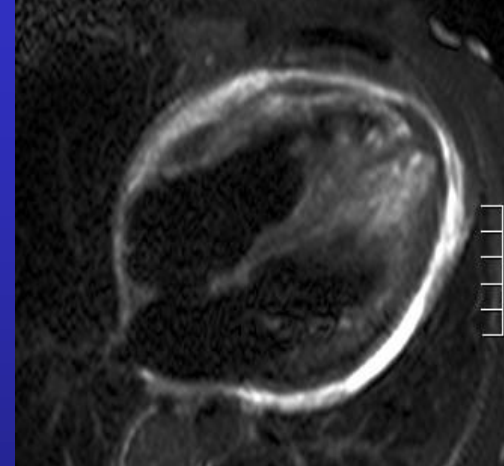
PERICARDITE ACUTA



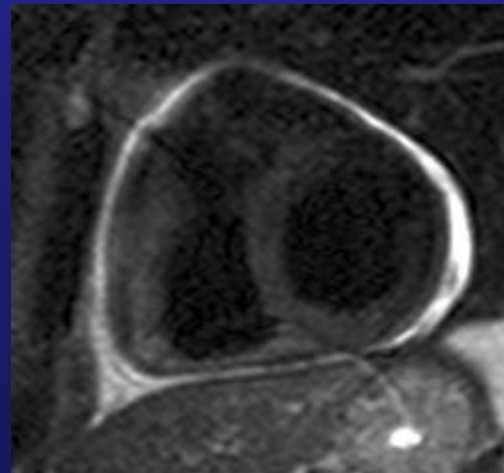
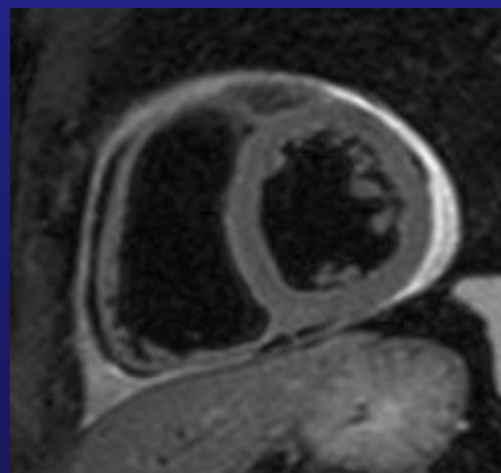
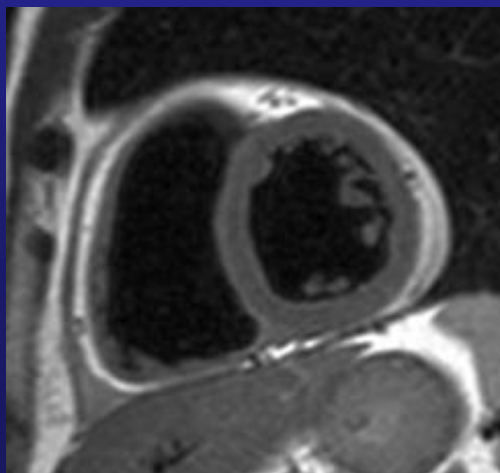
Black-blood



Black-blood fat sat

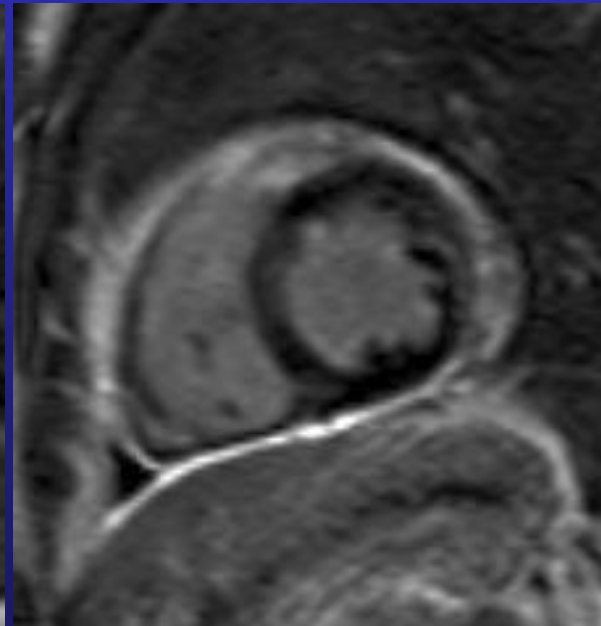
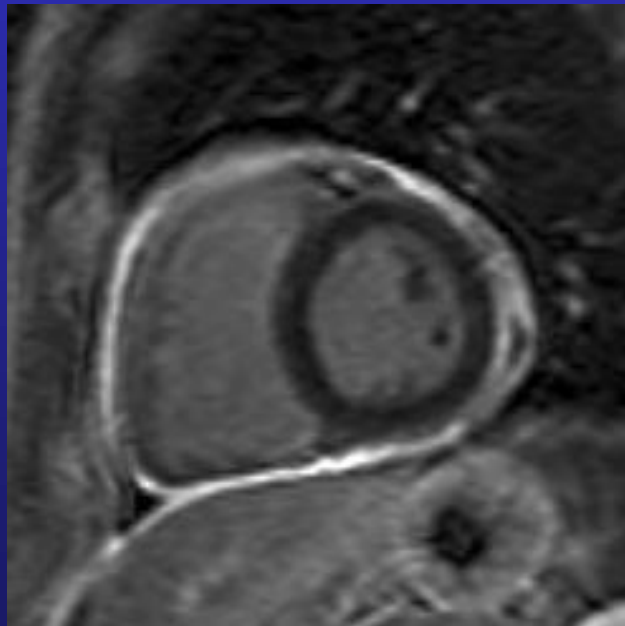
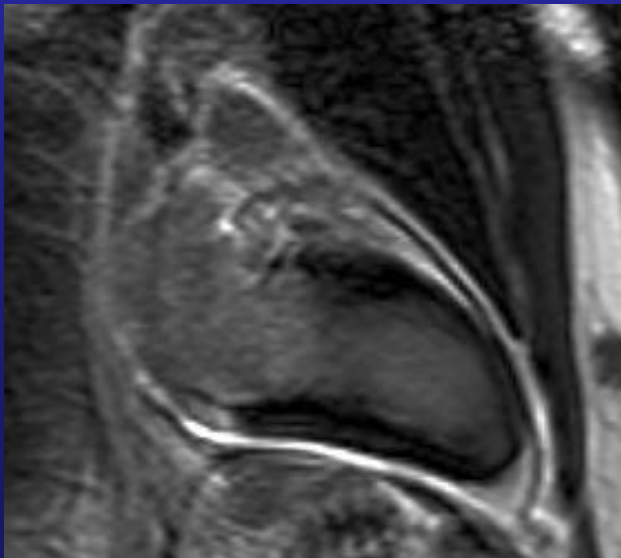
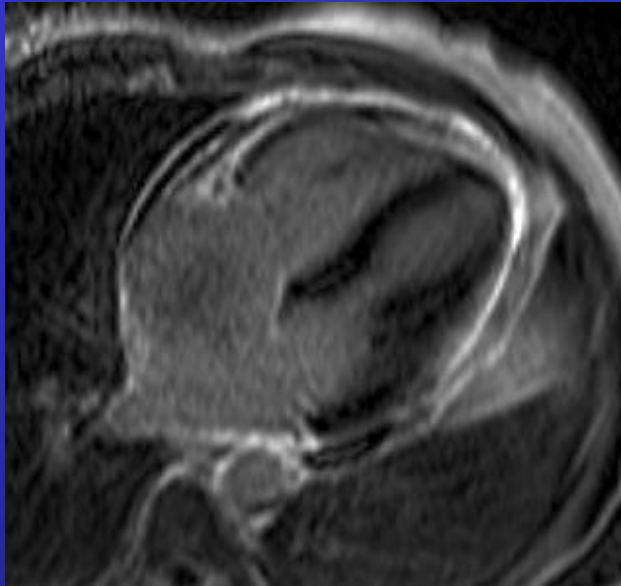


STIR



PERICARDITE ACUTA

DELAYED-GADOLINIUM ENHANCED-MRI



MIOPERICARDITE

International Journal of Cardiology 127 (2008) 17–26

www.elsevier.com

Review

Myopericarditis: Etiology, management, and prognosis

Massimo Imazio *, Rita Trincherò

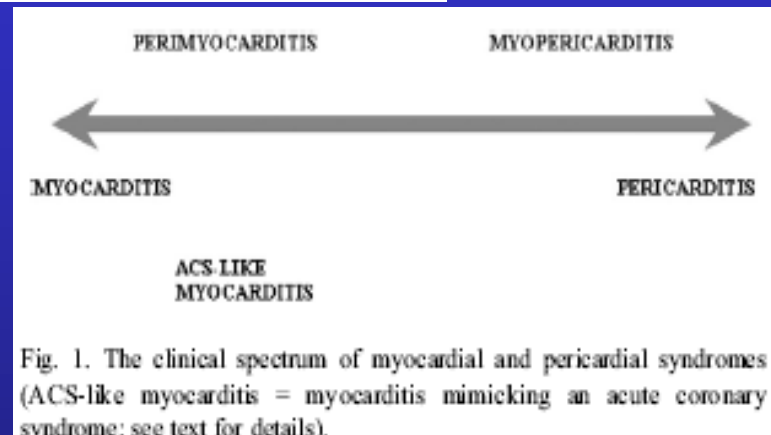
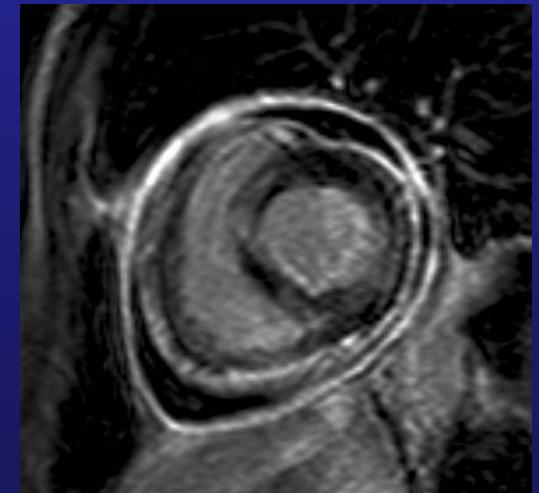
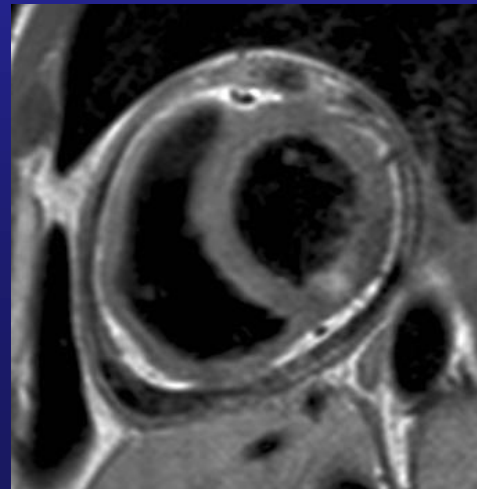


Fig. 1. The clinical spectrum of myocardial and pericardial syndromes (ACS-like myocarditis = myocarditis mimicking an acute coronary syndrome; see text for details).



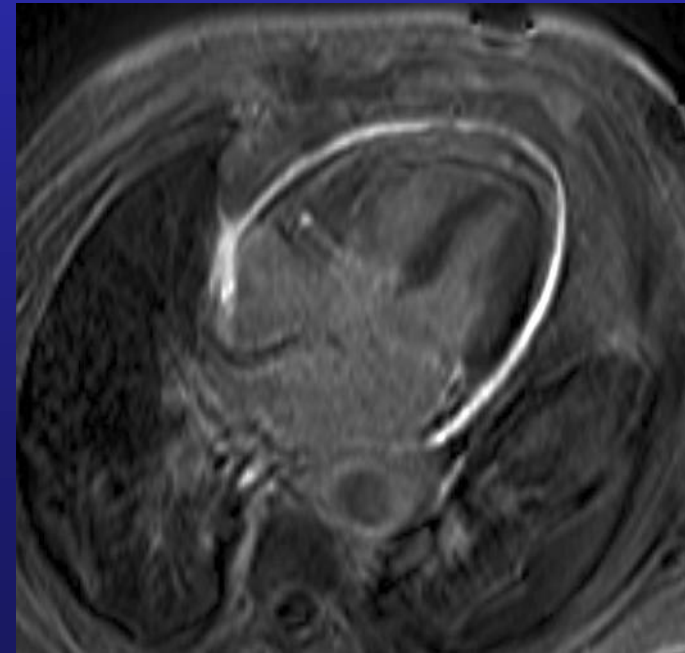
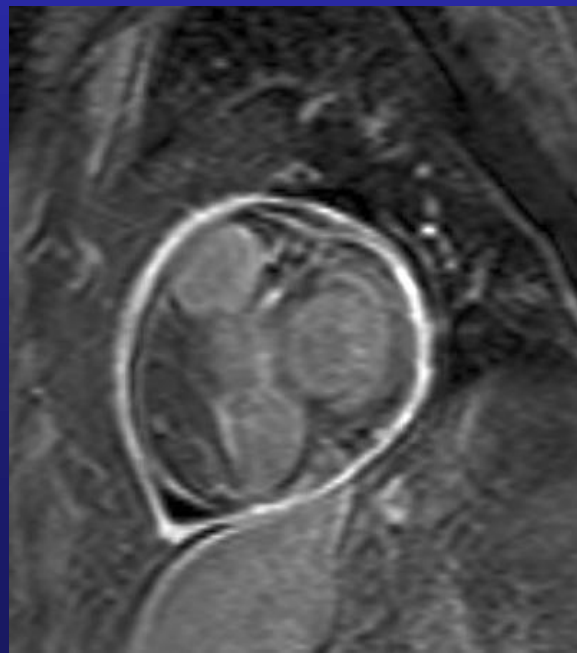
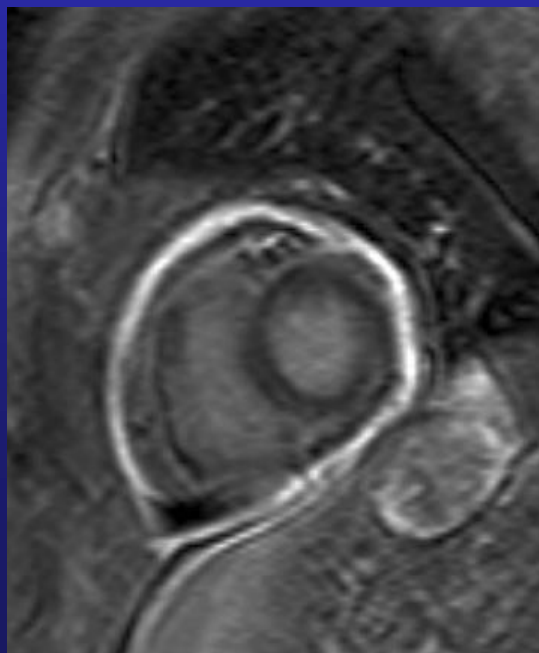
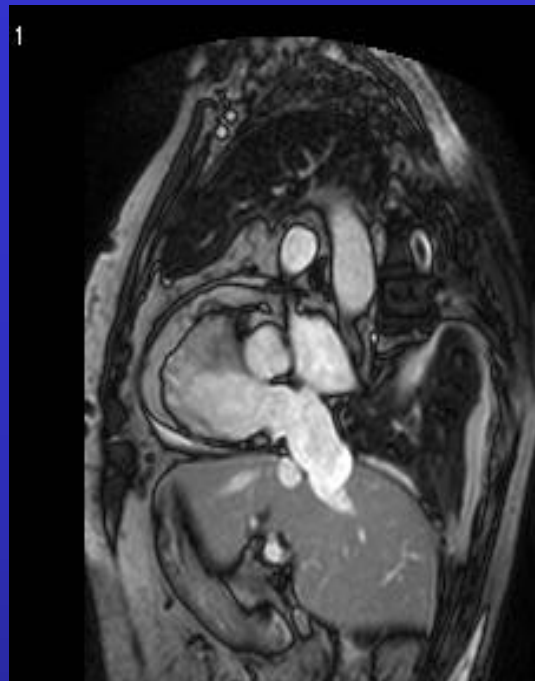
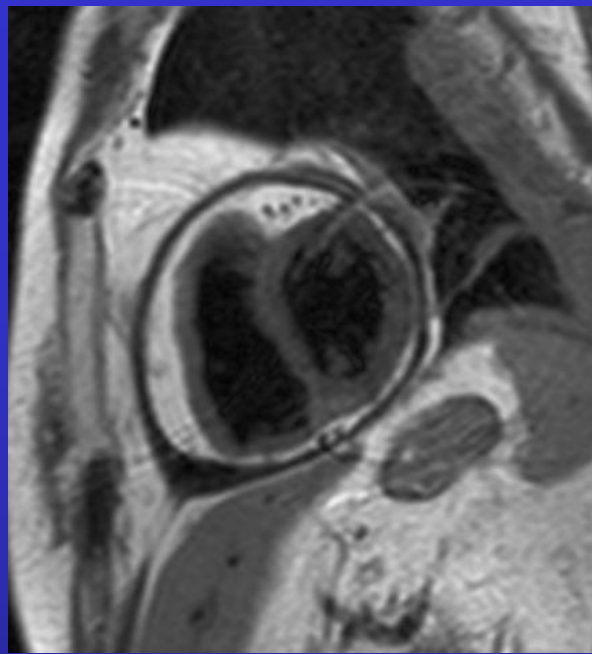
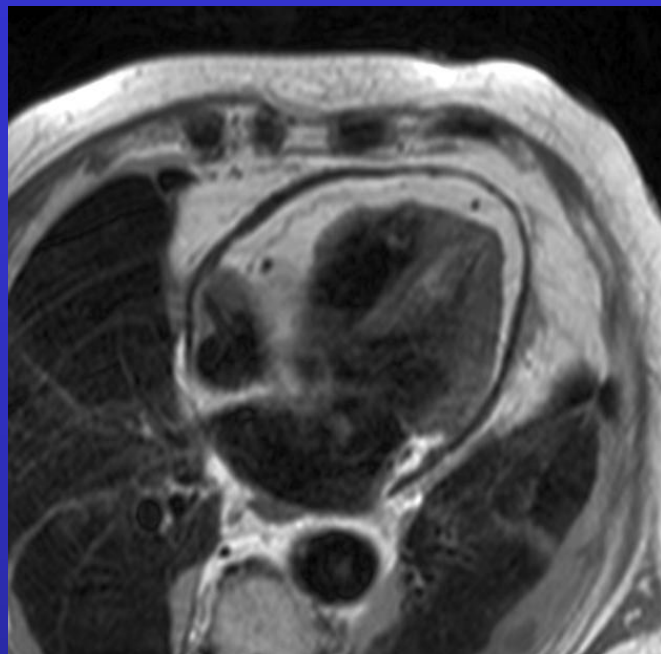
PERICARDITE COSTRITTIVA

Evoluzione subacuta/cronica caratterizzata dalla fusione dei foglietti parietale e viscerale con trasformazione del sacco pericardico in “cotenna” fibrosa o fibrocalcifica



Ostacolo al riempimento ventricolare diastolico

- Pericardio ispessito
- Basso segnale in T1w e T2w
- Calcificazioni (TC)
- Alterato pattern di riempimento diastolico dei ventricoli
- Dilatazione vene cave
- Movimento paradossale del setto in fase inspiratoria



DIAGNOSI DIFFERENZIALE

cardiomiopatia
restrittiva

vs

pericardite
costrittiva

Diagnosi RM di pericardite costrittiva:

ispessimento pericardio + ostacolato riempimento
diastolico

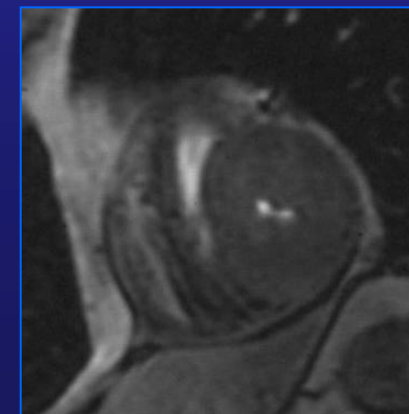
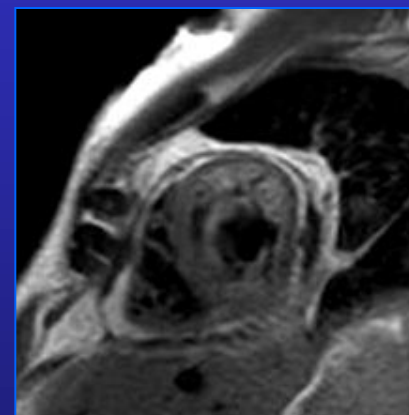
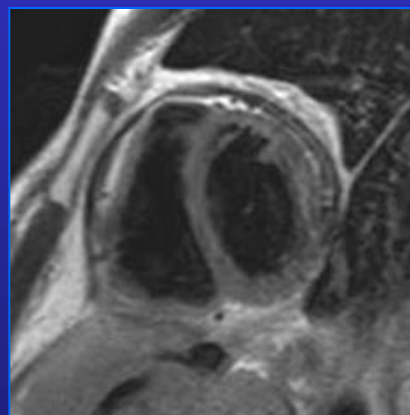
- Accuratezza 93%
- Sensibilità 88%
- Specificità 100 %

(Masui T, Finck S, Higgins CB. Radiology 1982)

Falsi negativi

per cut off ispessimento pericardico
(4mm)

(Hancock E.W. Heart 2001)

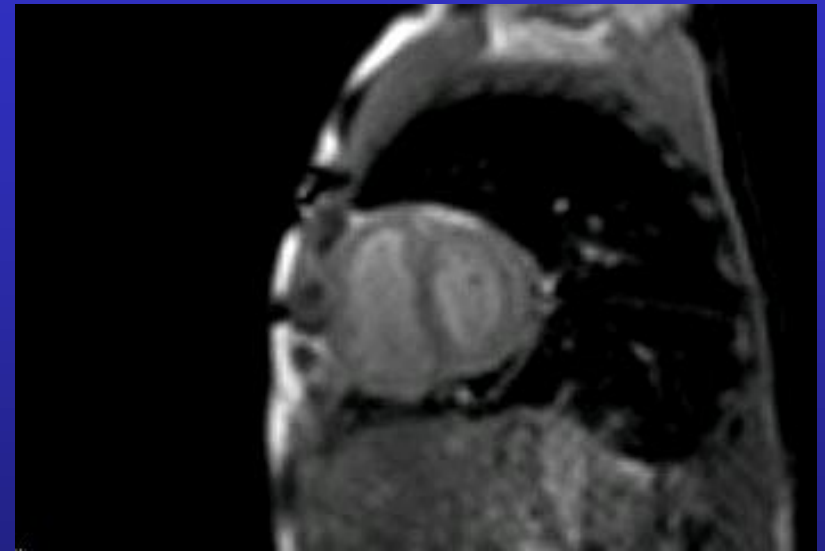
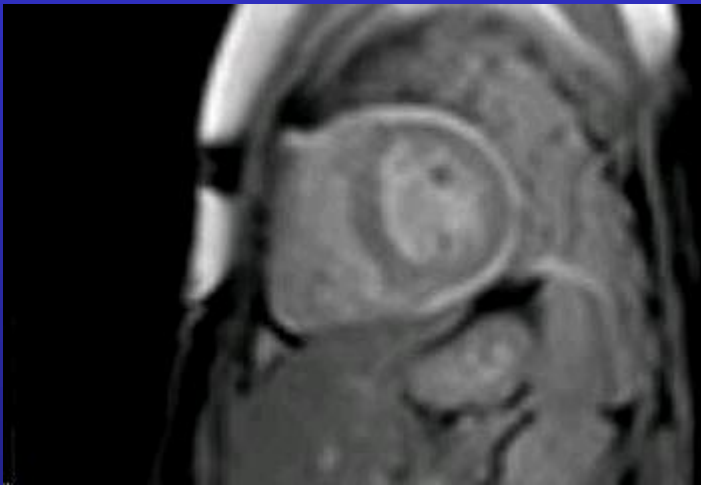


DIAGNOSI DIFFERENZIALE

cardiomiopatia
restrittiva

vs

pericardite
costrittiva



*Influenza del respiro sul movimento settale:

Pericardite costrittiva → Appiattimento – sbandieramento del setto verso sinistra all'inizio dell'inspirazione

Cardiopatía restrittiva → Normale convessità del setto durante tutte le fasi del respiro

Tumori cardiaci

Imaging: 1. Ecocardiografia: diagnosi difficile, spesso non conclusiva

2. Cardio-RM (cardio-TC):

- Presenza (artefatto/variante anatomica/lesione), localizzazione
- Estensione locoregionale, ev infiltrazione di strutture cardiache e mediastiniche
- Effetti emodinamici del tumore
- Caratterizzazione tissutale + sede e caratteristiche lesione → tipo di tumore, diagnosi diff pseudotumori, pianificazione terapia

Tumori cardiaci e pericardici primitivi

Frequenza relativa

Benigni (75%)

- **Mixoma**
- Fibroelastoma papillare
- Rabdomioma
- Fibroma
- Amartoma, lipoma, teratoma, emangioma, paraganglioma, tumore cistico nodo AV

Maligni (25%)

- Angiosarcoma
- Rabdomiosarcoma
- Istiocitoma fibroso m.
- Sarcoma indiff, osteosarcoma, mixo/leiomiosarcoma
- linfoma
- mesotelioma

Tumori cardiaci

Caratteristiche di benignità

- origine da AS (mixoma)
- lesione unica (no rabdomioma)
- margini netti (emangioma?)
- capsula o pseudocapsula (no emangioma)
- segnale omogeneo (mixoma? emangioma?)
- raramente versamento pericardico ematico
- sviluppo endocavitario (mixoma)

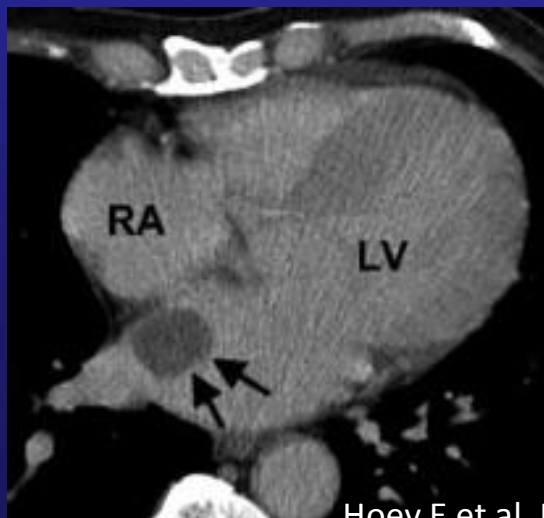
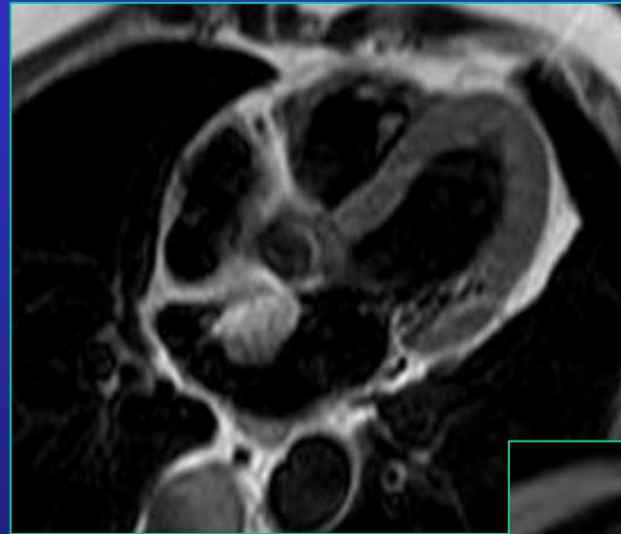
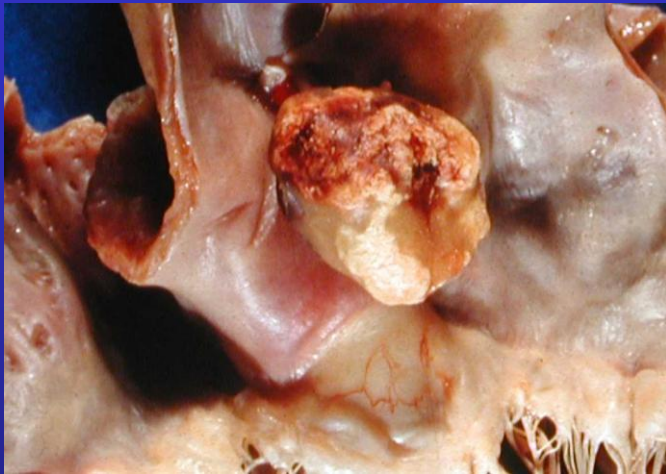
Grebenc ML, et al. Radiographics 2000; 20: 1073-1103.

Hoffmann U, et al. Am J Cardiol 2003; 92:890-895.

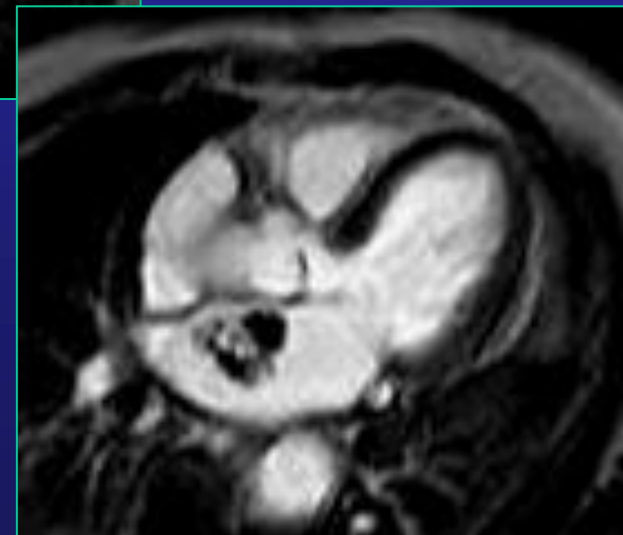
mixoma

- Origine dalla sup. endocardica
- Non infiltra i tessuti circostanti
- **Sviluppo endocavitario**

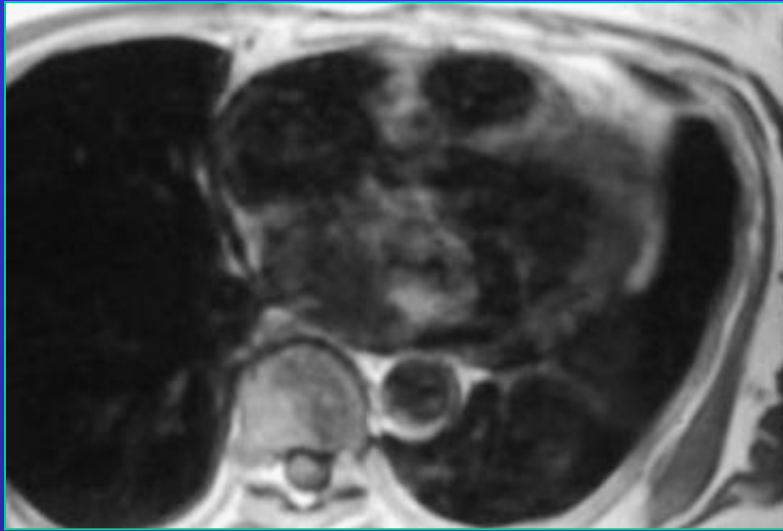
- **Sede:** - **75% AS (setto IA)**
 - 20% AD
 - 5%:ventricoli
- **Pedunculati;** 1/4 sessili



Hoey E et al. Diagn Interv Radiol 2012;18:67-77



mixoma



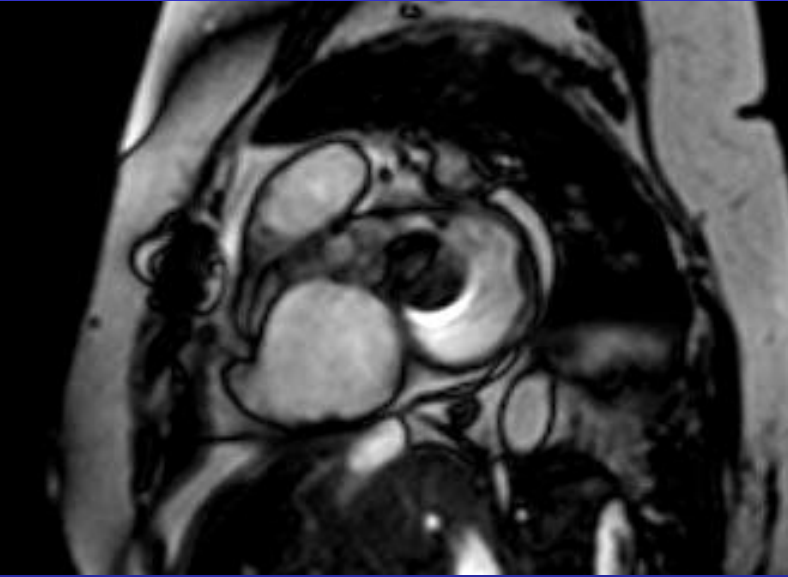
- **Segnale eterogeneo**
 - componente mixomatosa: ↓ in T1; ↑ in T2;
 - fibrosi
 - trombosi superficiali
 - calcificazioni
 - componenti emorragiche
 - ↓↓ in "Cine" (Fe)

Enhancement disomogeneo

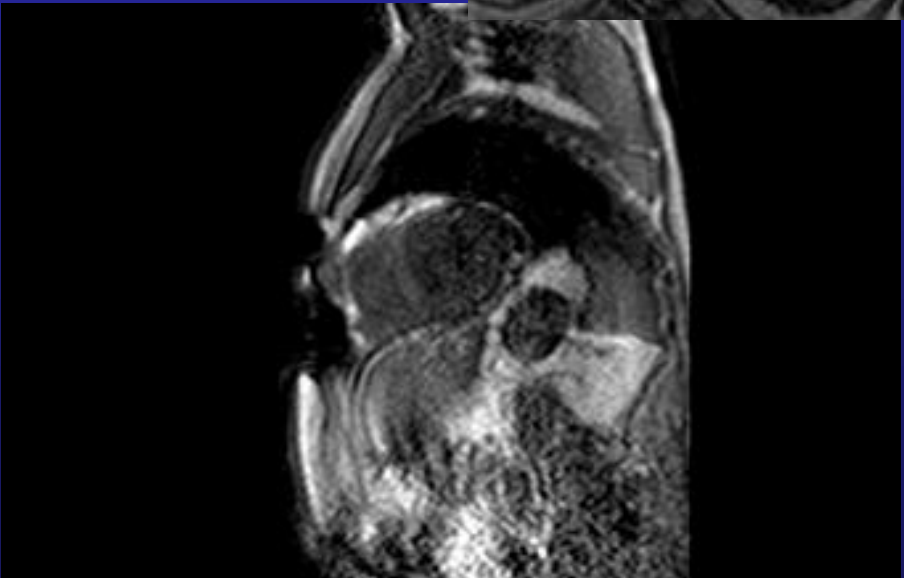
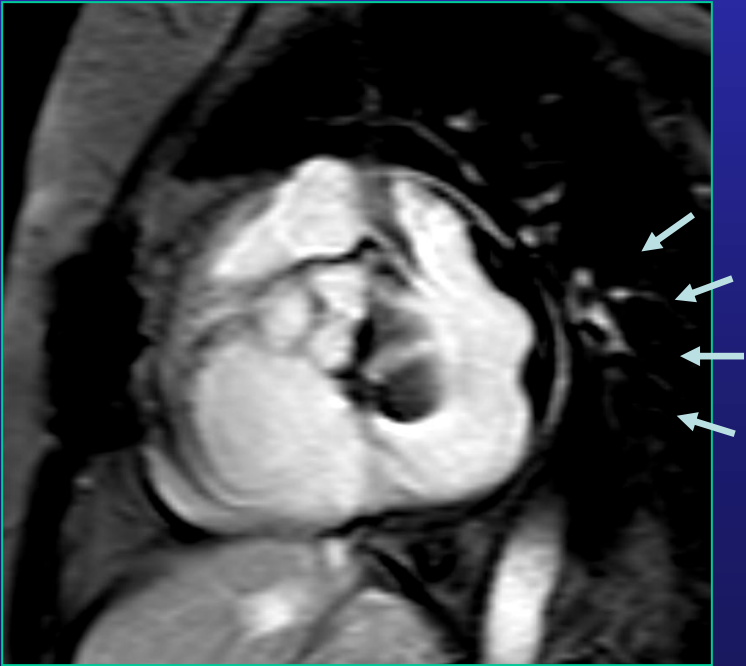
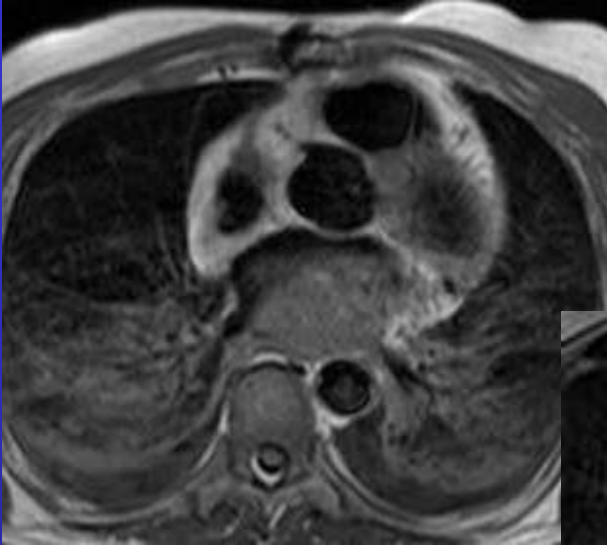
DD con trombi, ematomi,

- No enhancement e no peduncolo
- Trombi atriali: in auricola o cavità dilatate
- Trombi ventricolari: in aree con alterata contrattilità o aneurismatiche

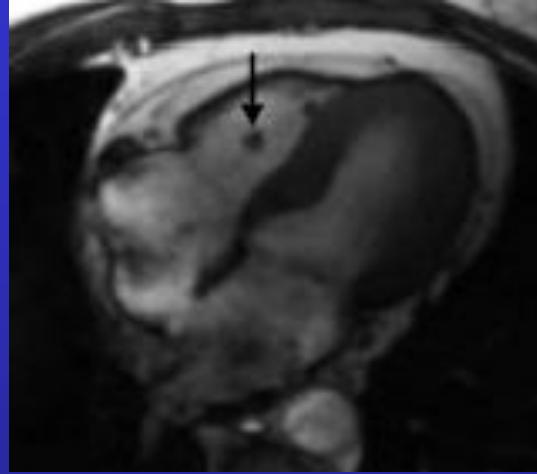
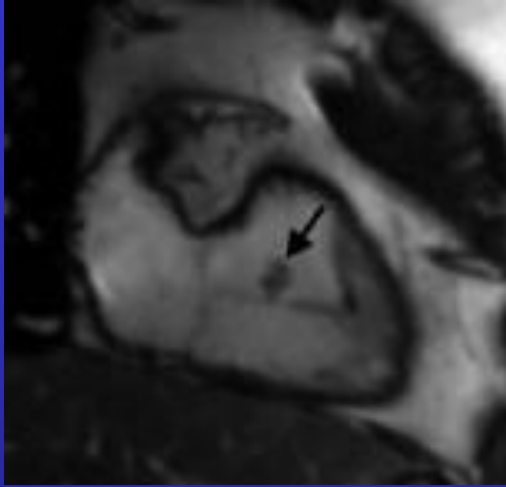
trombo atrio sn



Ematoma parietale



fibroelastoma papillare



- . 10% dei tumori cardiaci ; generalmente asintomatici
- . Piccole dimensioni (<1 cm); masserelle collegate da peduncolo all'endocardio
- . 90% originano dalla superficie valvolare

Wintersperger BJ, et al. Eur Radiology 2000; 10: 443.

Sun JP, et al. Circulation 2001; 103: 2687.

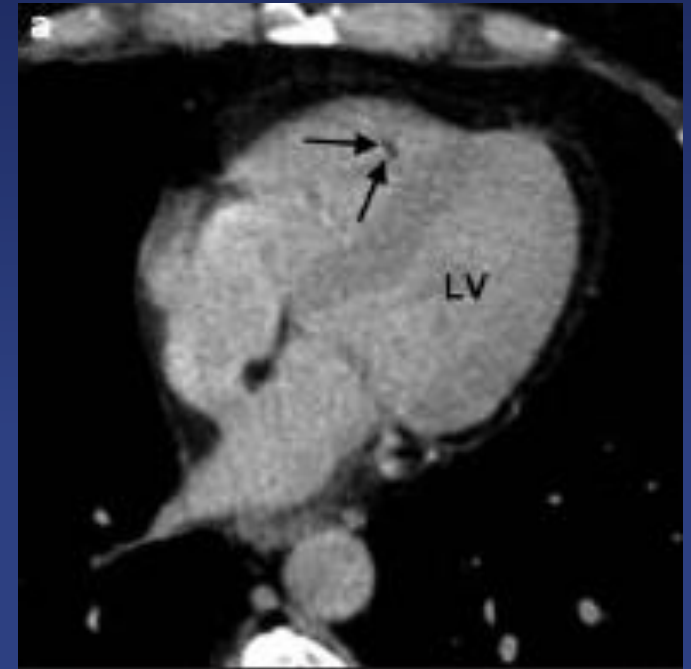
Fibroelastoma papillare

Echo

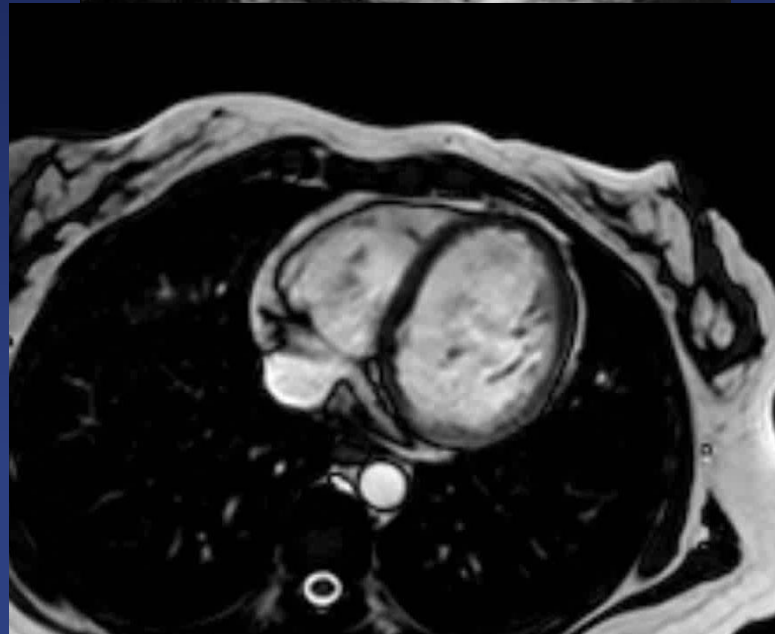


- . Ben visualizzati in ecocardiografia come piccole masse mobili e omogenee
- . Difficile visualizzazione con TC e RM
 - sequenze cine!
- DD vegetazioni endocarditiche (associate a distruzione lembi valvolari)

CT



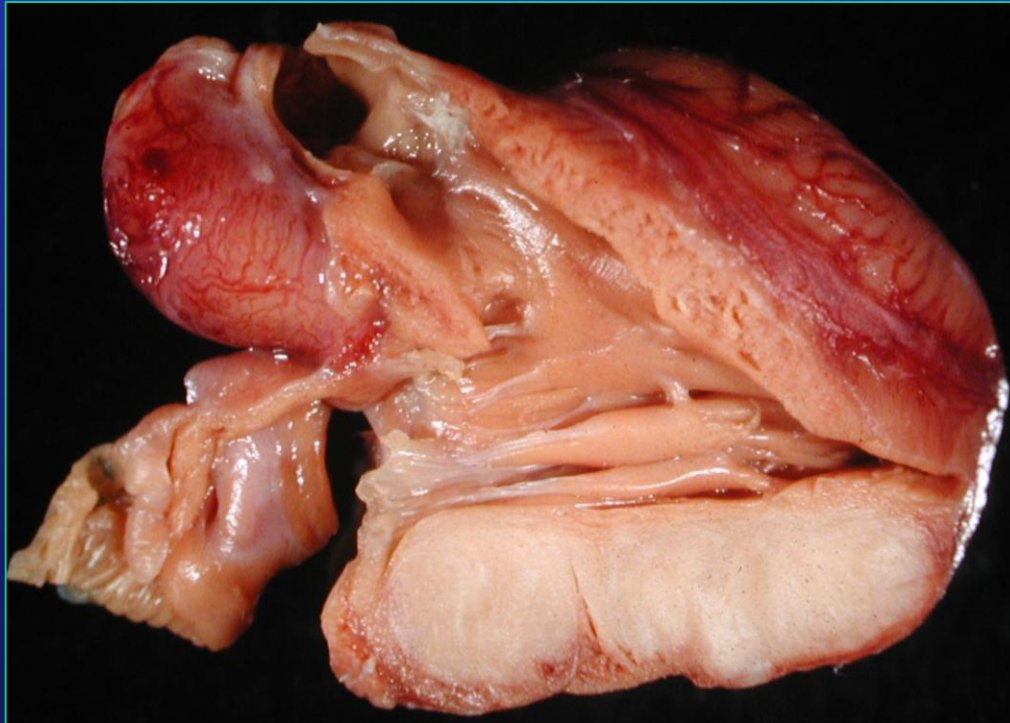
MRI



SEQUENZE "CINE"

fibroma

- Età pediatrica
- Sede più frequente: ventricoli (parete libera VS e setto IV)
- Sviluppo nella parete; rotondeggianti, dimensioni medio-grandi (2-10 cm)
- Segni e sintomi: 1/3 asintomatici; alterazioni ECG; aritmie; scompenso cardiaco; morte improvvisa

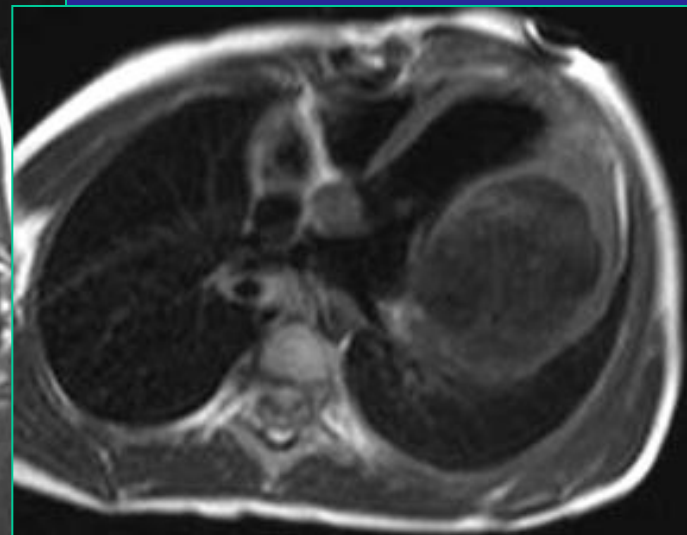
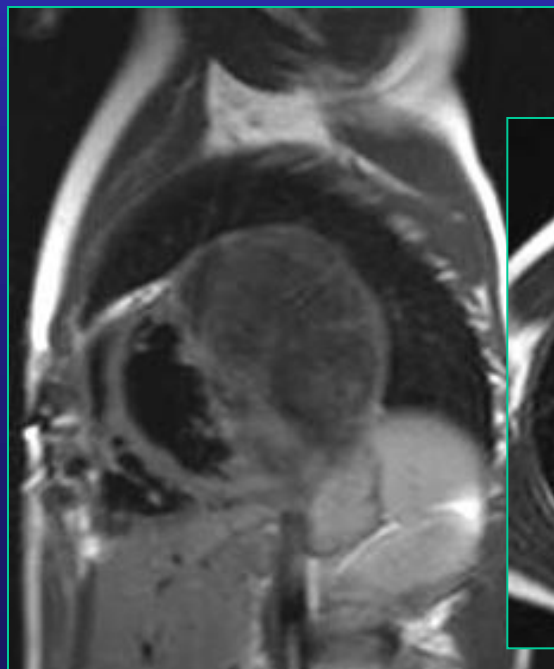
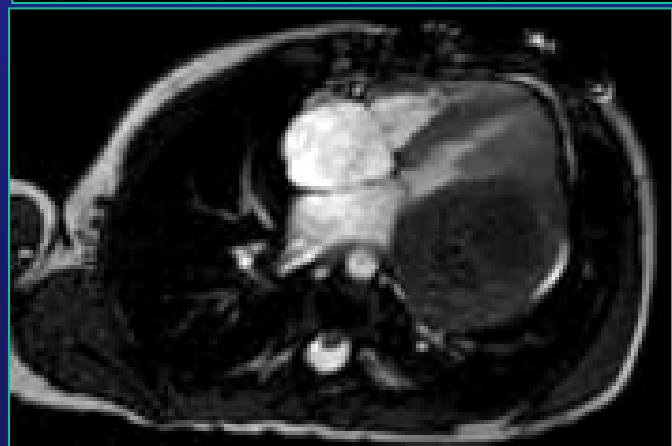
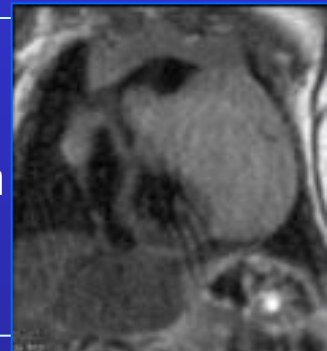


fibroma

- **Segnale omogeneo** (↓ in T2w): no componenti cistiche, emorragiche o necrotiche
- Calcificazioni
- D.D. con rbdomiomi in bambini

rbdomiomi

- Spesso multifocali
50% sclerosi tuberosa
- ↑ in T2
- No calcificazioni

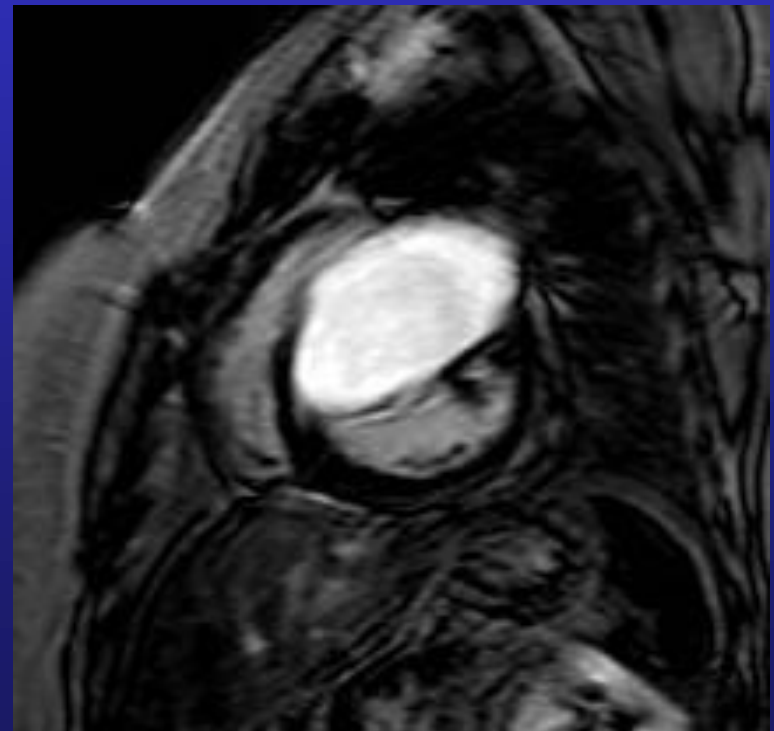
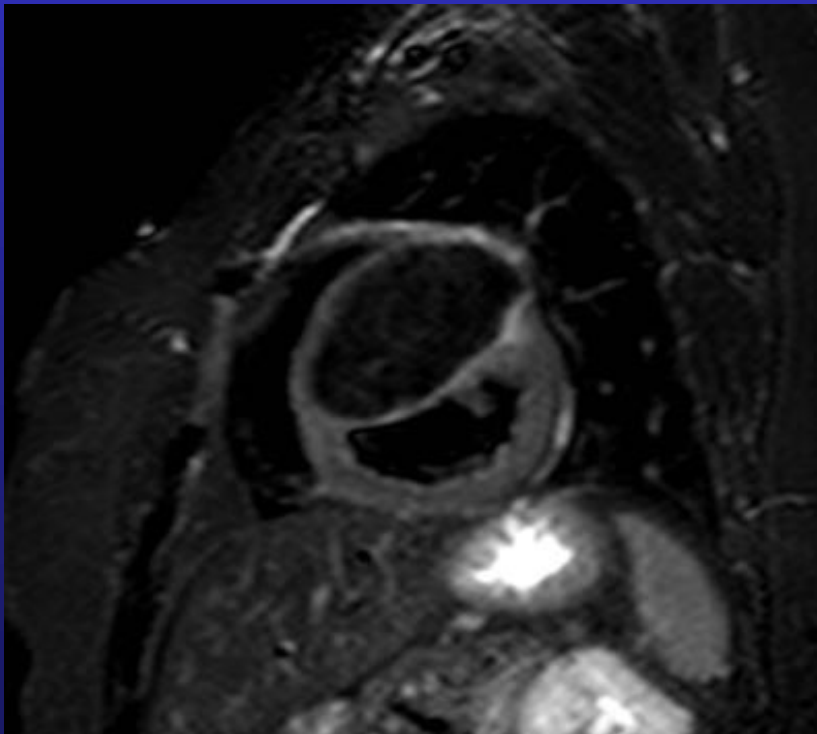


fibroma

Scarsa vascolarizzazione
Fibroblasti e tessuto collagene

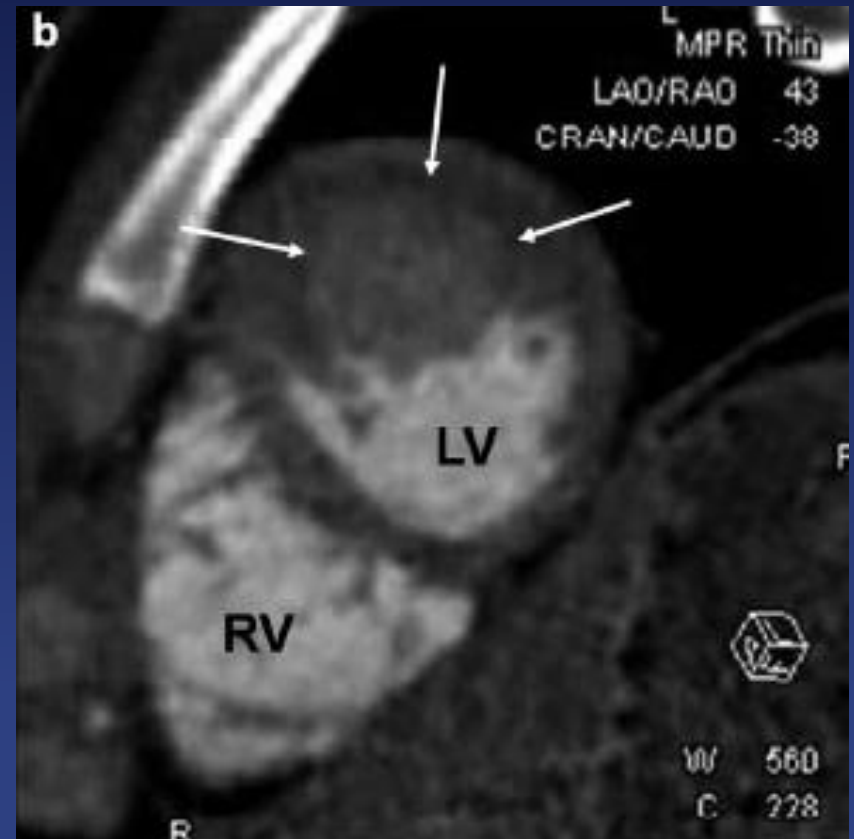


- No enhancement precoce
- SI LATE ENHANCEMENT



Fibroma: CT

ipodenso, omogeneo, calcificazioni

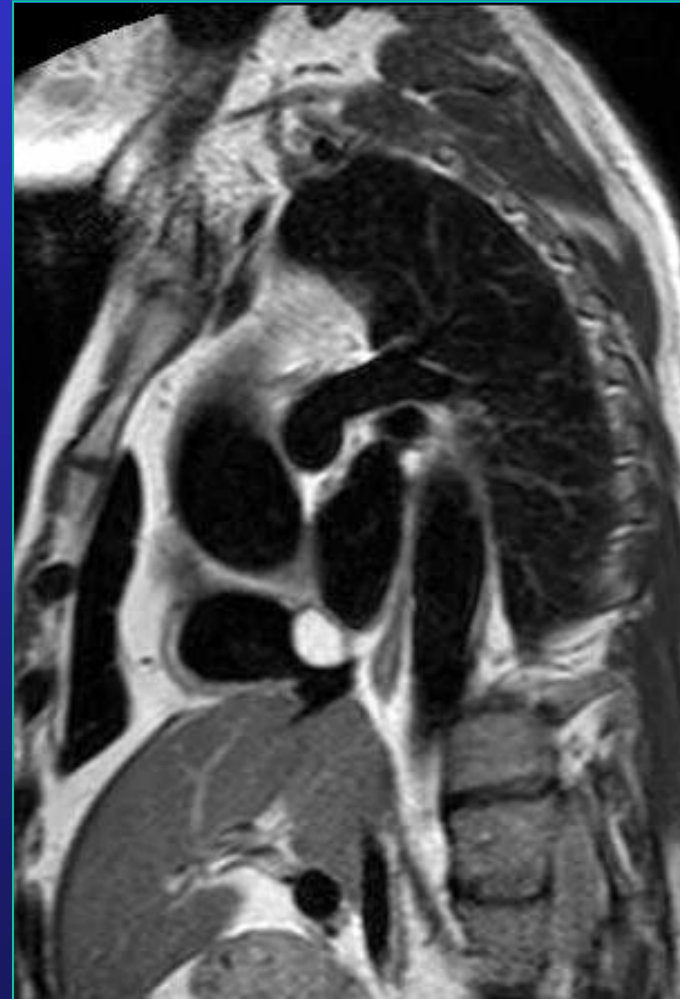
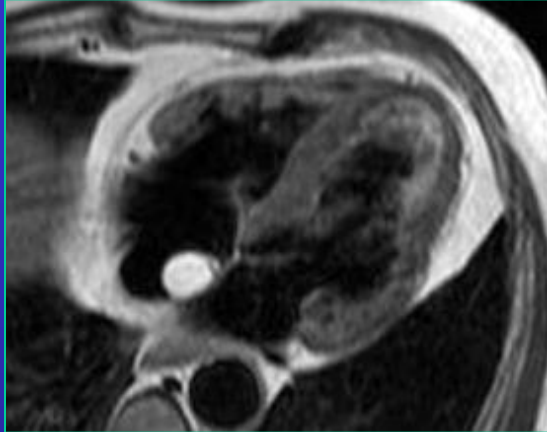


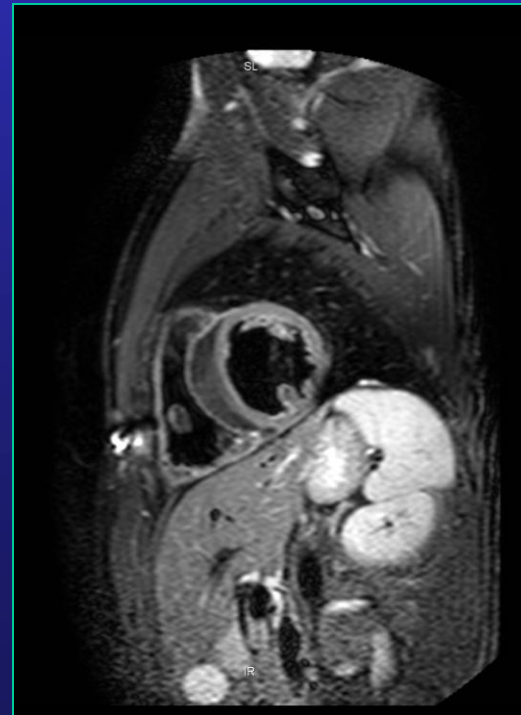
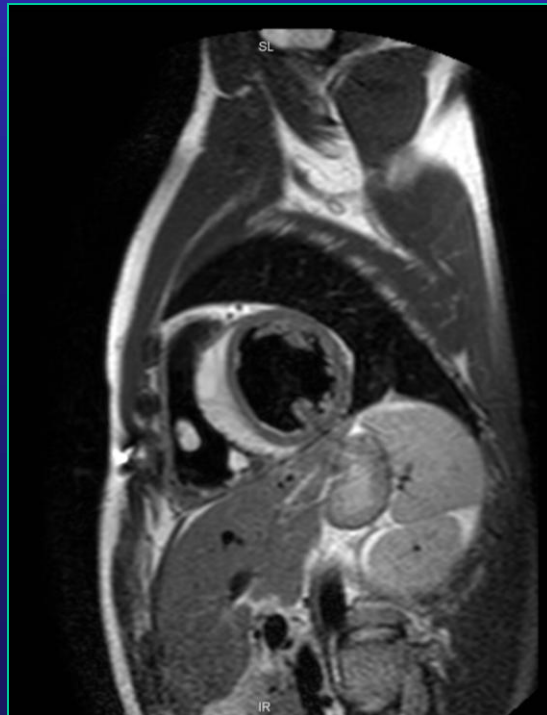
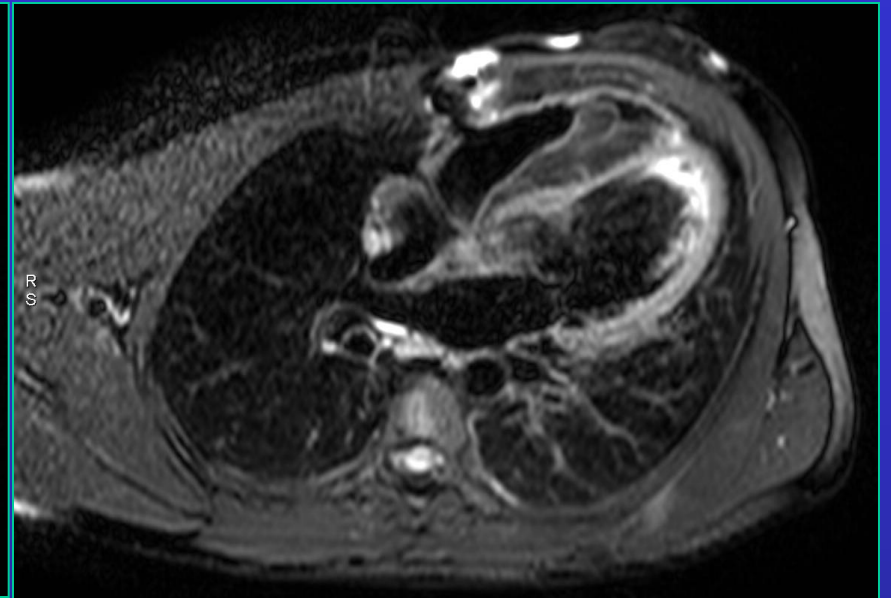
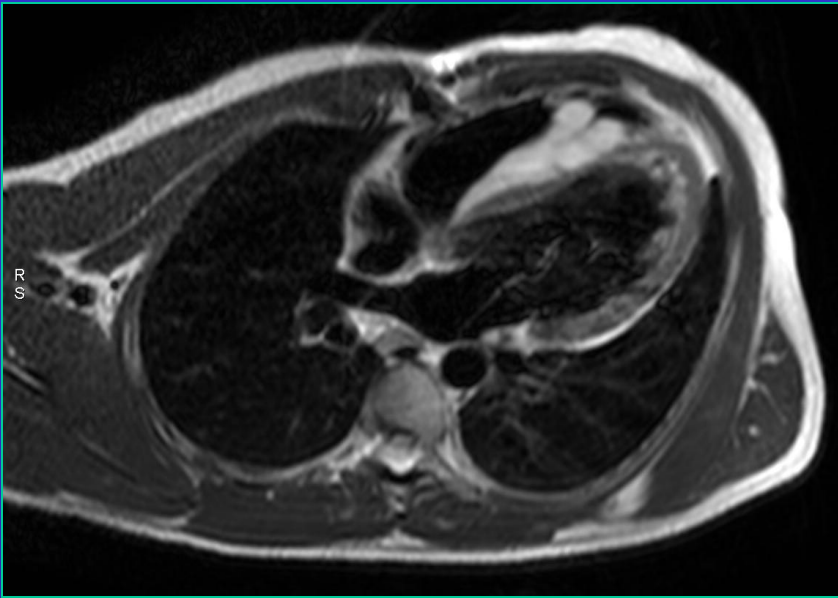
lipoma

Segnale iperintenso che si sopprime
in fat sat

Origine epicardio/endocardio

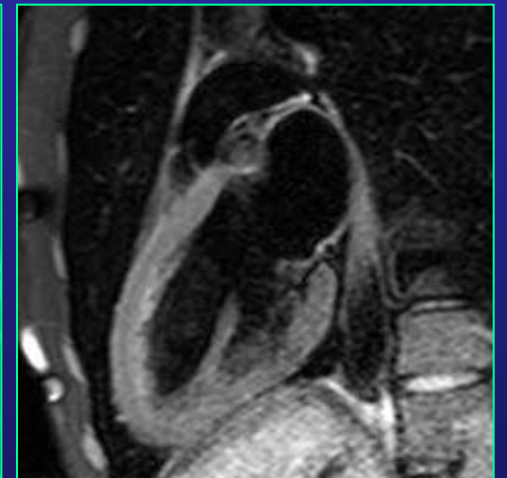
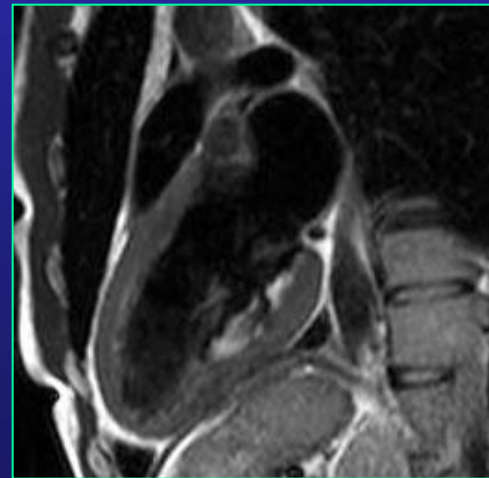
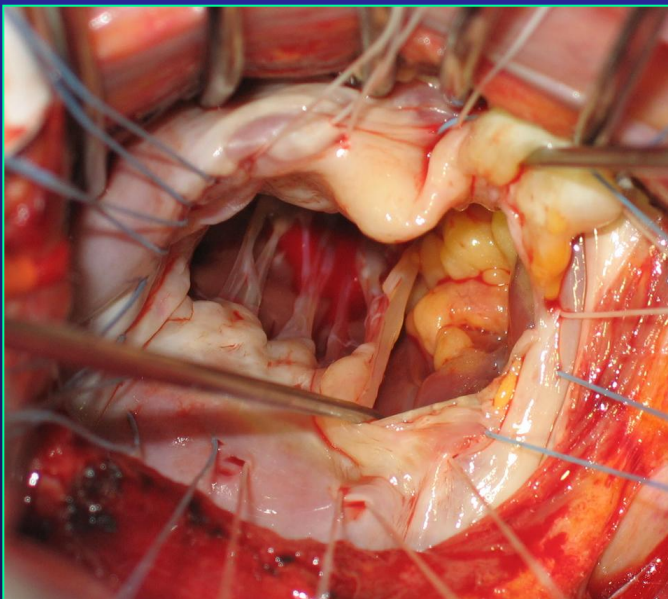
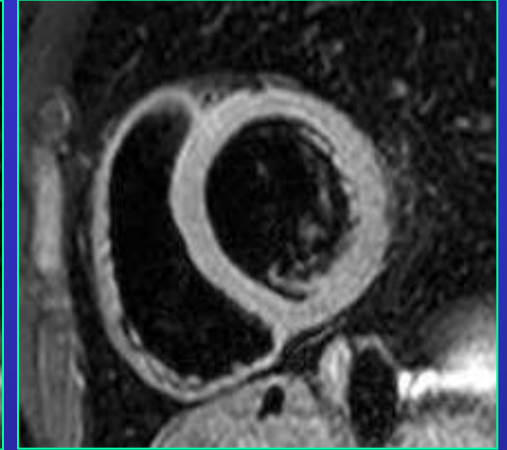
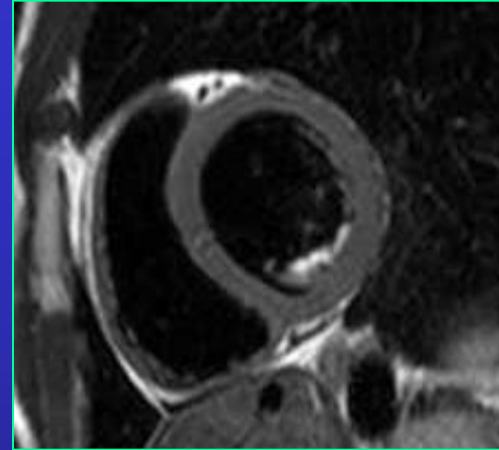
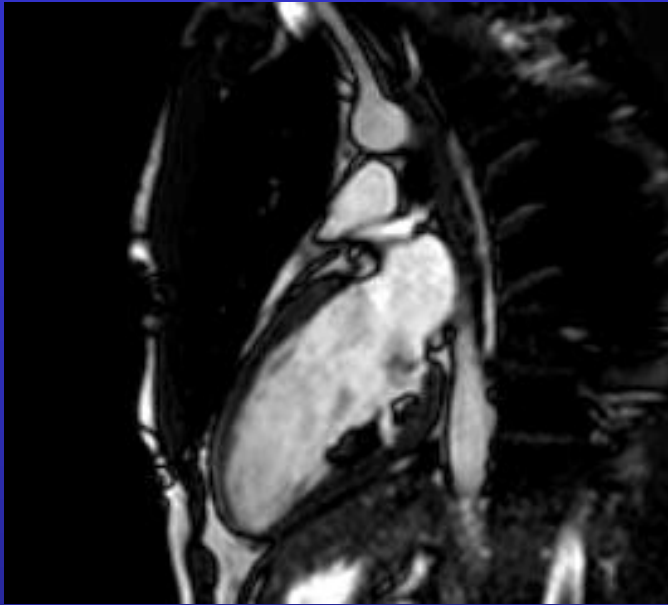
DD mixoma - lipomatosi setto





lipomatosi
setto IV dx

Amartoma lipoideo



angioma

- . 5-10% tumori benigni
- . Segnale e enhancement omogeneo o disomogeneo (iper T2) in relazione alla classificazione: cavernosi, capillari, arterovenosi.
- . Endocardici (capillari)/intramurali (tutte le tre categorie)
- . D.D. con angiosarcomi, paragangliomi (atriali, prod catecolamine)



Tumori cardiaci

Caratteristiche di sospetta malignità

- origine da AD (angiosarcoma)
- larga base di impianto
- crescita infiltrativa intramurale
- assenza di pseudocapsula
- segnale disomogeneo (dopo m.d.c.)
- invasione/ispessimento pericardio (diffuso o nodulare)
- emopericardio
- a volte multifocali (mts)



Grebenc ML, et al. Radiographics
2000; 20: 1073-1103.

Sarcomi

Prevalenza: 2^a npl primitiva del cuore; 1^a fra le maligne

Istologia:

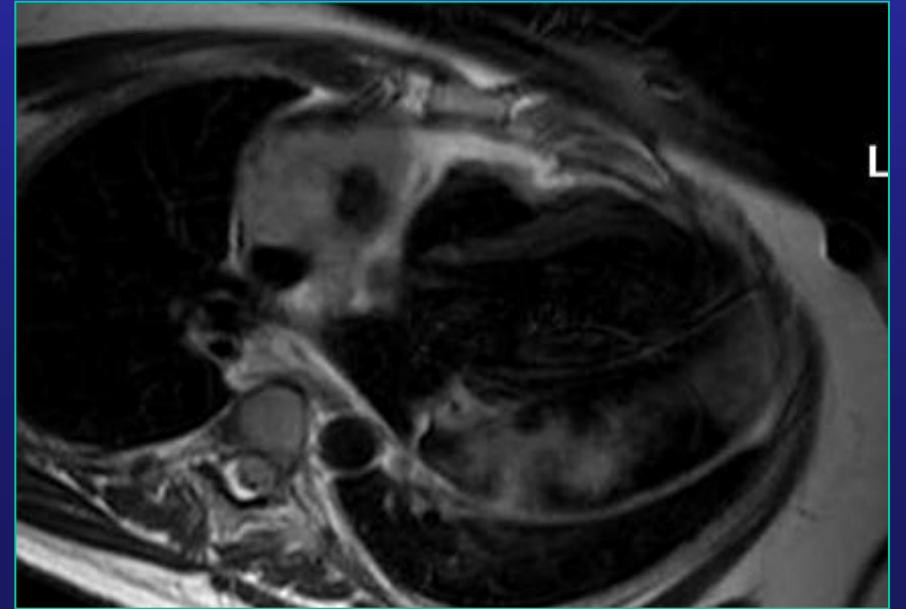
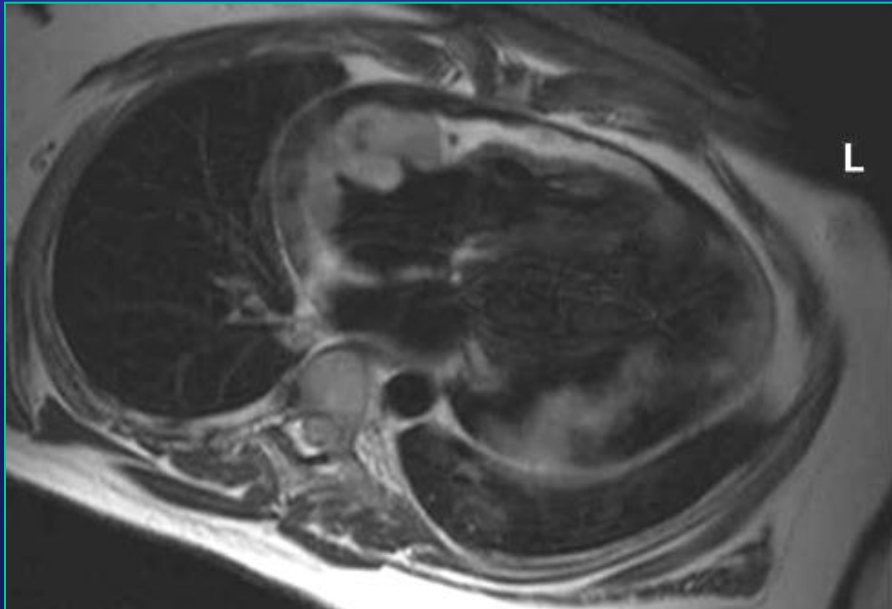
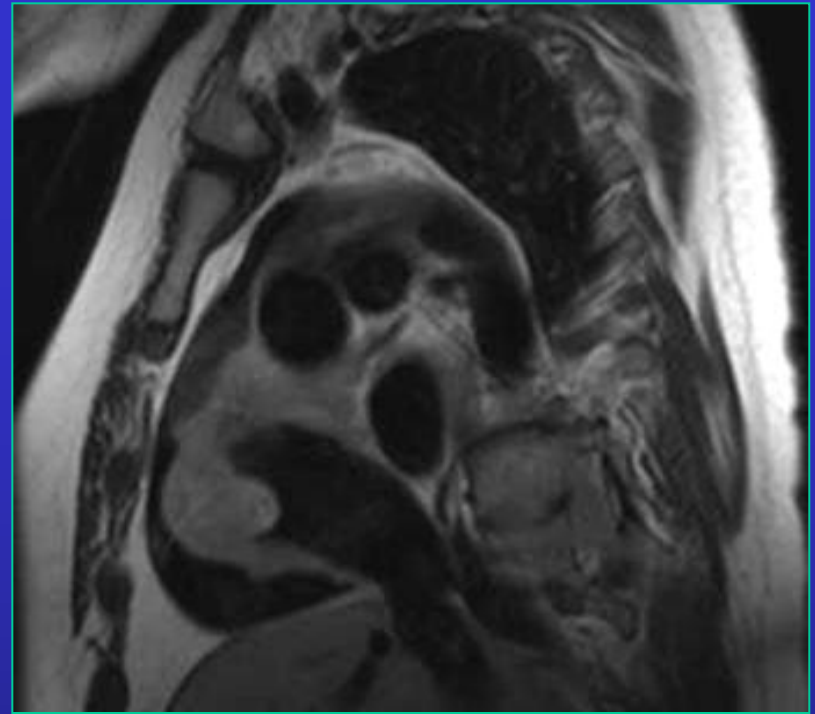
- 37% —————> Angiosarcomi
- 24% —————> Sarcomi indifferenziati
- 4-7% —————> Rabdomiosarcoma
- 11% —————> Istiocitoma fibroso maligno
- 8-9% —————> Leiomiosarcoma
- 3-9% —————> Osteosarcoma

Localizzazione:

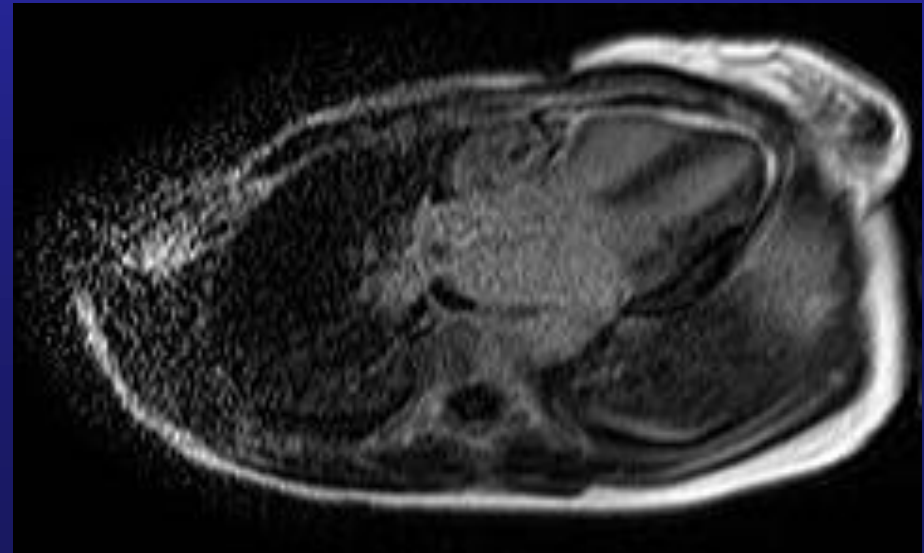
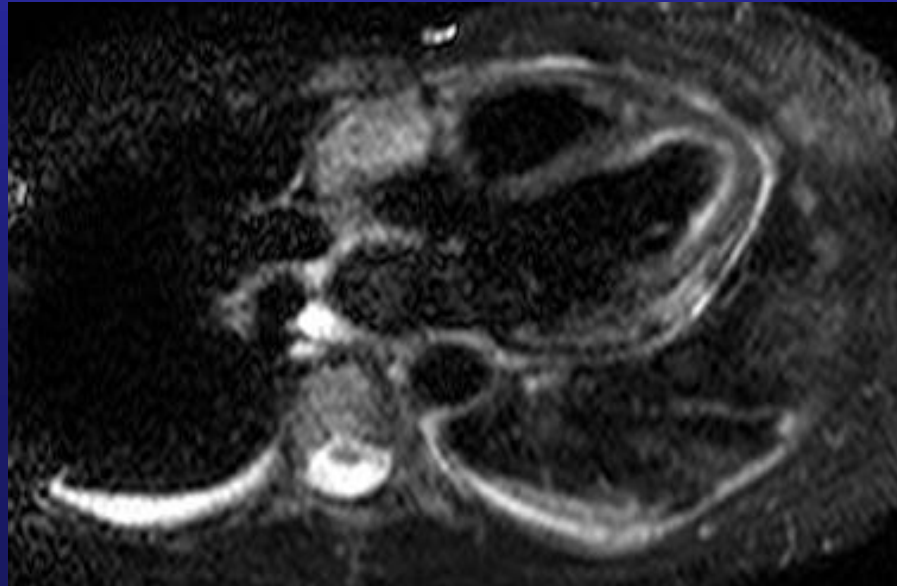
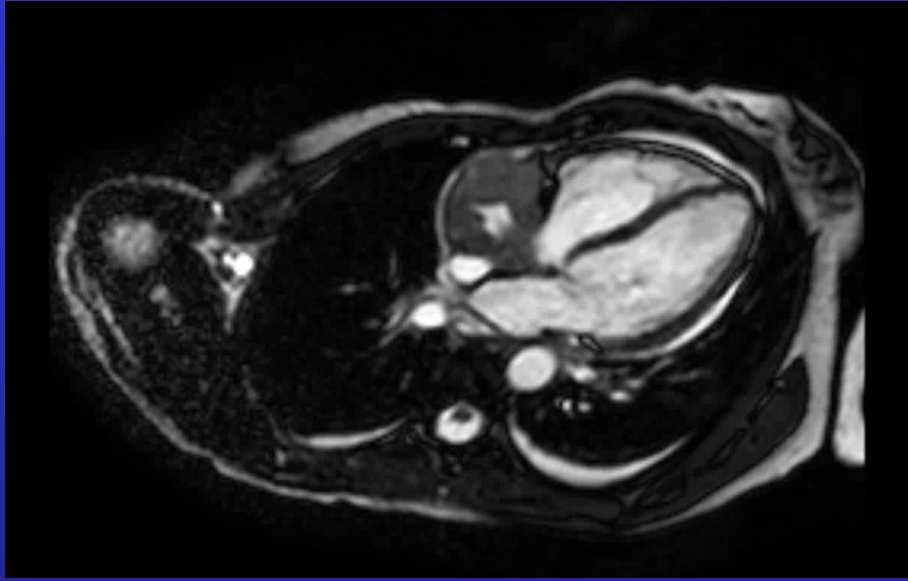
- Angiosarcoma —————> atrio destro
- Rabdomiosarcoma —————> = prevalenza in AD, AS, VD, VS
- Altri sarcomi —————> atrio sinistro (DD con mixomi)

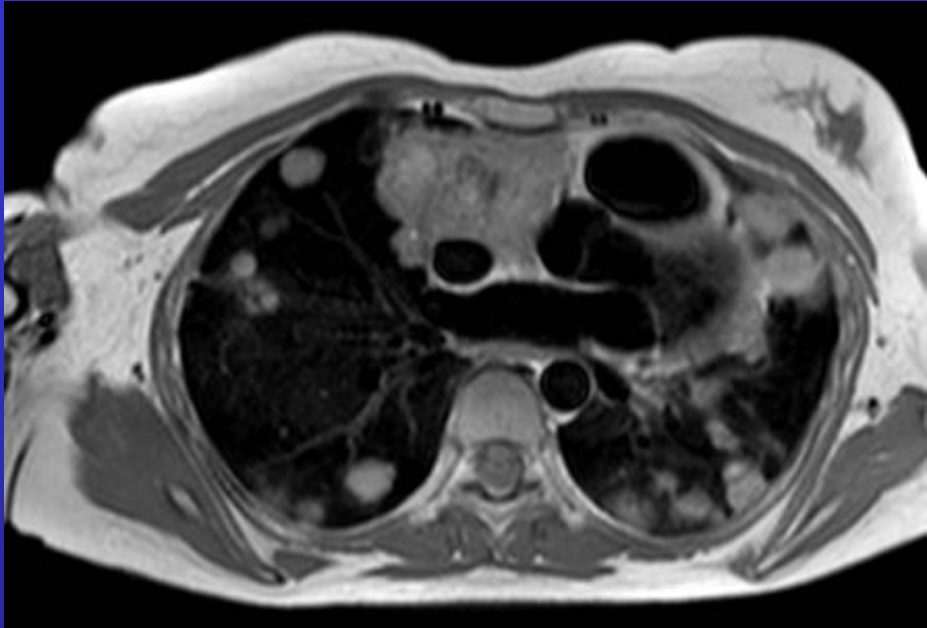
Angiosarcoma

- 75% AD con infiltrazione pericardica
- Voluminosa massa infiltrante
- Larga base di impianto
- Interessamento pericardico
- Versamento pericardico emorragico
- Eterogenea in T1, \uparrow in T2
- Eterogeneo enhancement dopo Gd
- Metastasi precoci (polmonari)



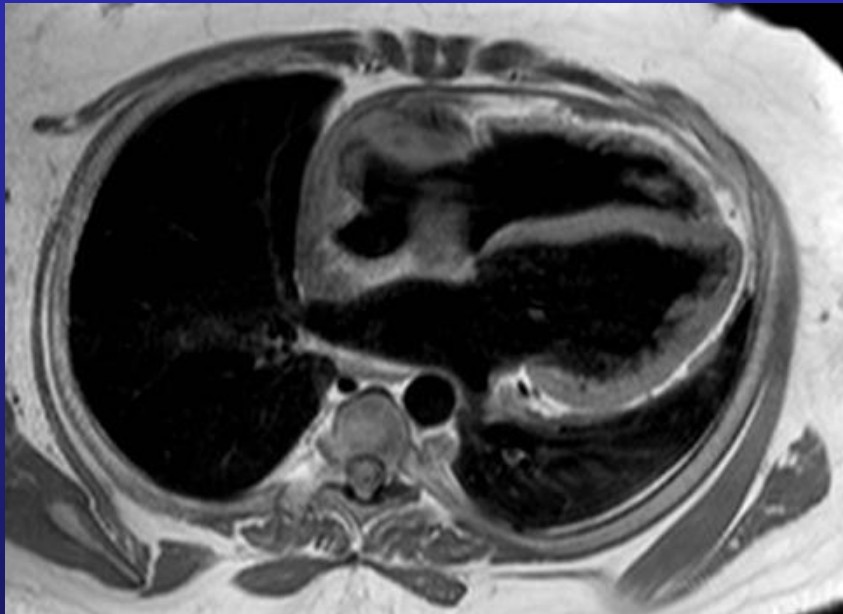
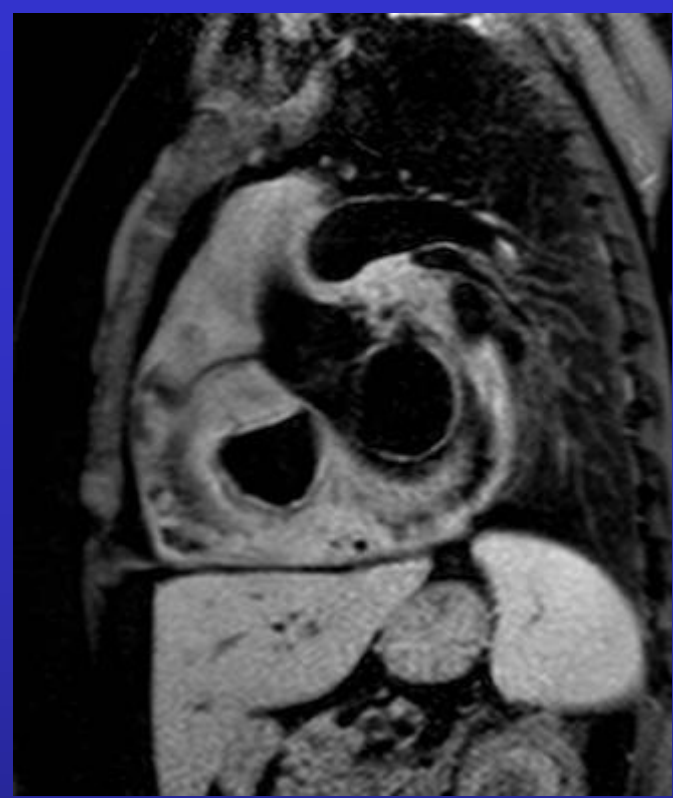
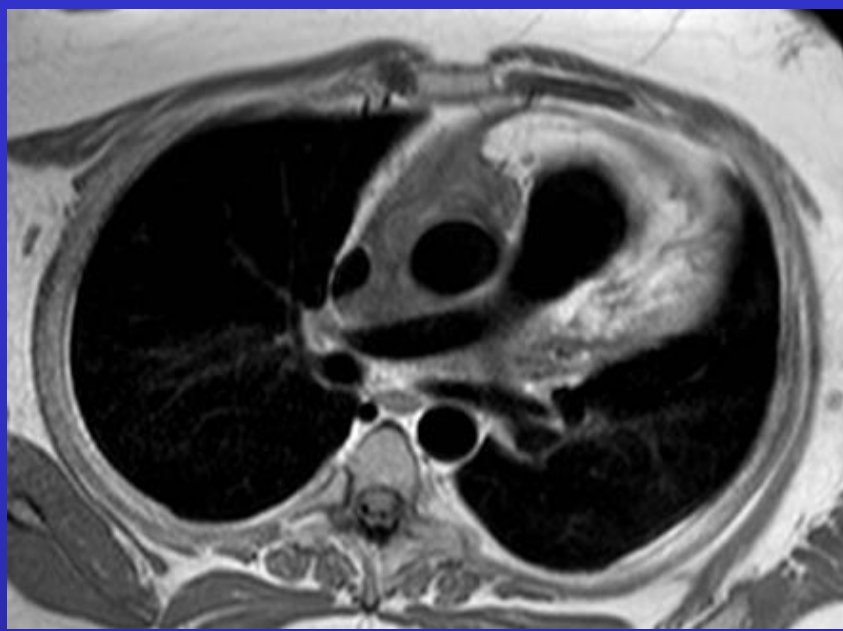
Angiosarcoma





Angiosarcoma - metastasi

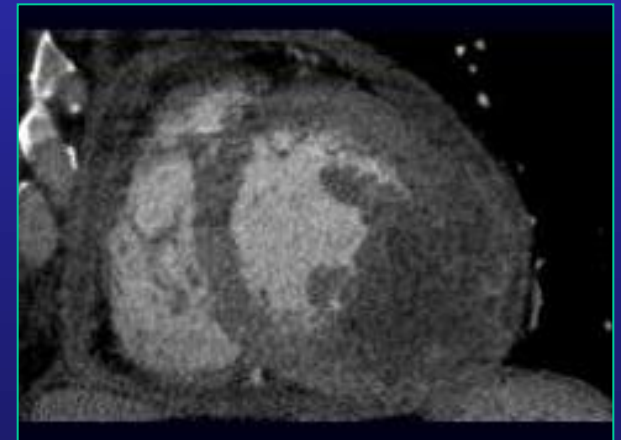
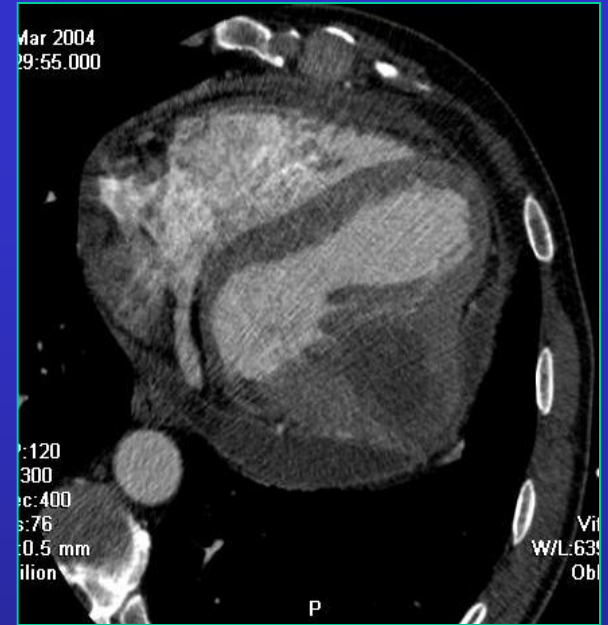
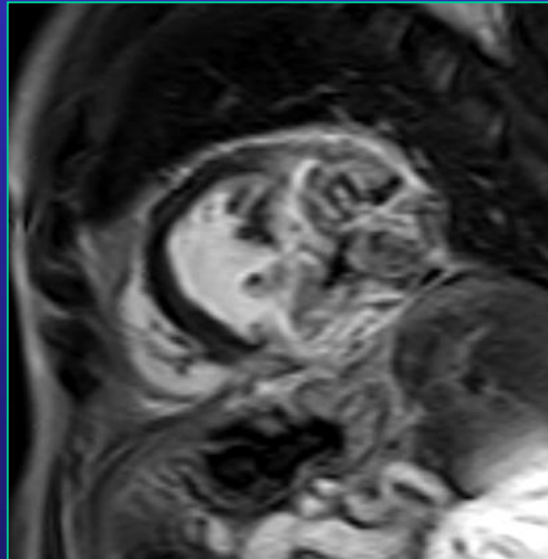
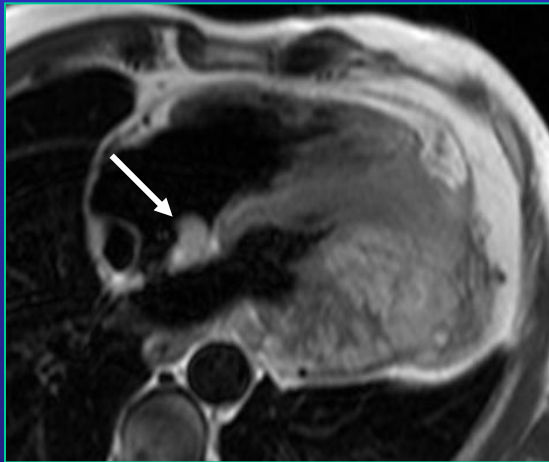
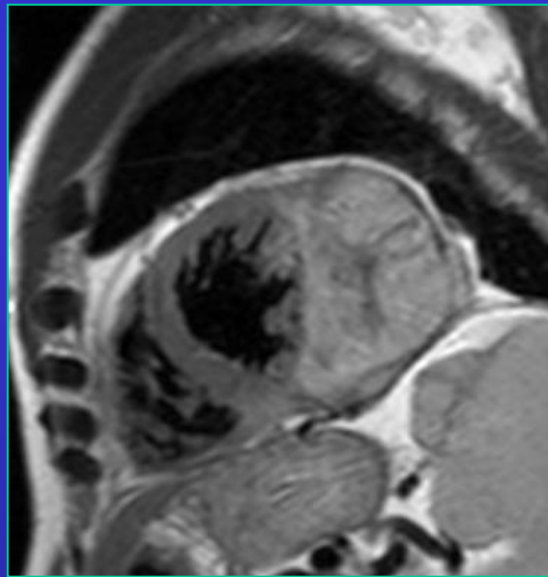
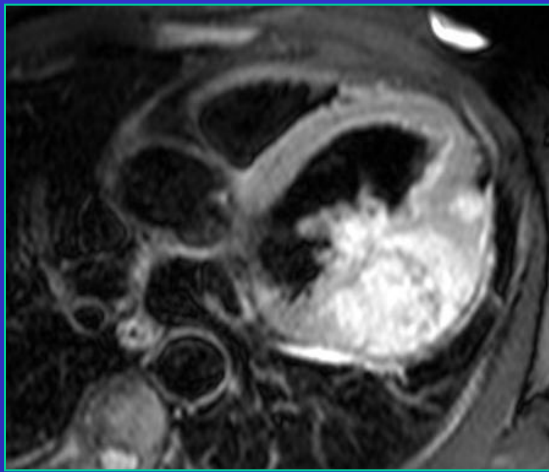




Dagna L, Corti A, Langheim S, Guglielmi B, **De Cobelli F**, Doglioni C, Fragasso G, Sabbadini MG, Ferrarini M. J Clin Oncol. 2012 Oct 1;30(28):e286-90.

Malattia di Erdheim-Chester:

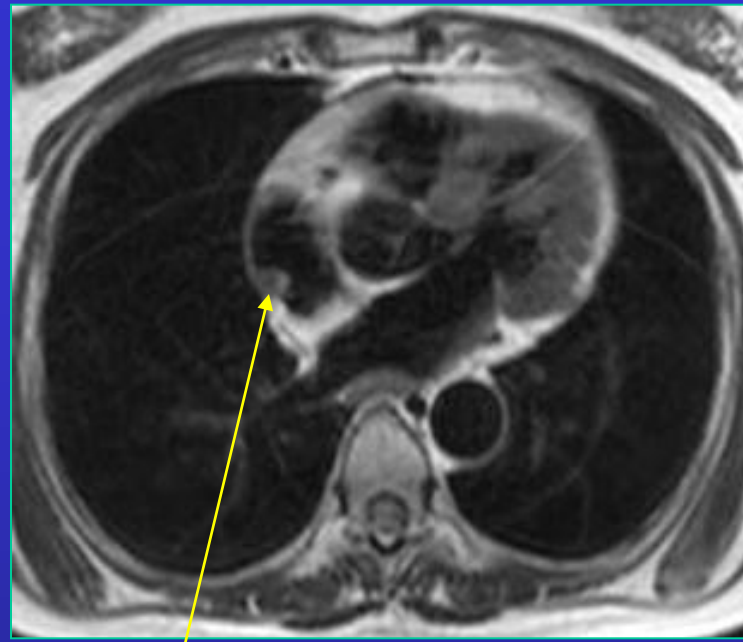
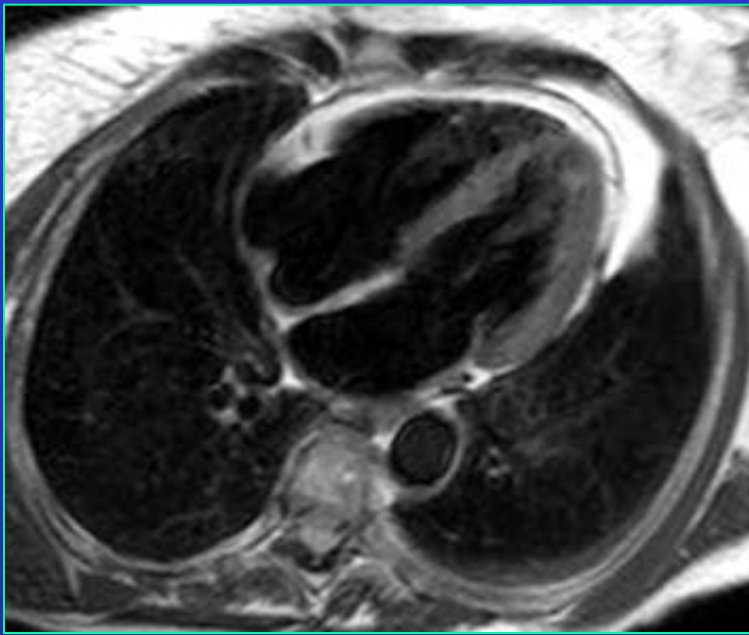
rara malattia infiammatoria caratterizzata da infiltrato xantogranulomatoso



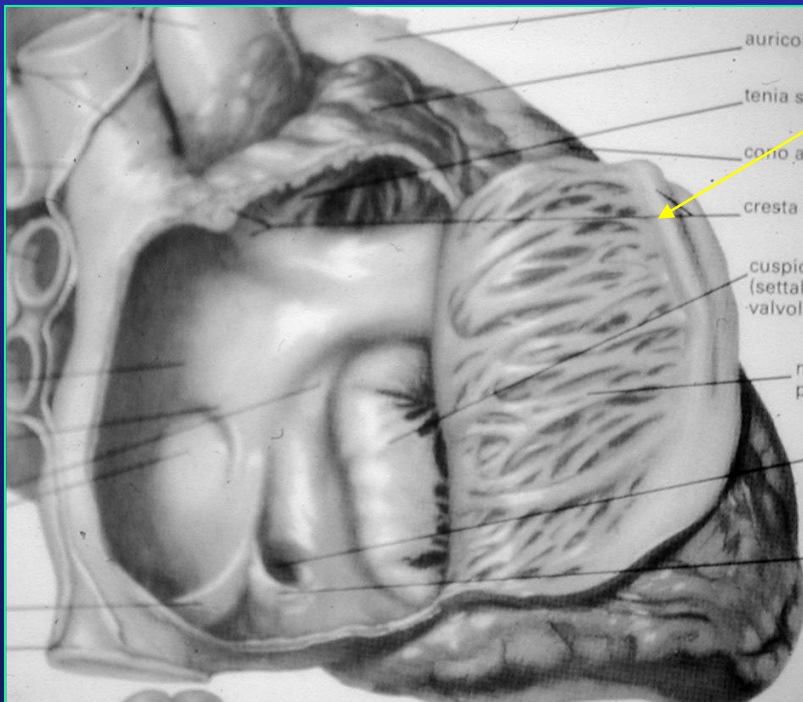
rabdomiosarcoma: origine ventricoli, sviluppo intramurale infiltrante, segnale iperintenso in T2 con enhancement disomogeneo (necrosi)

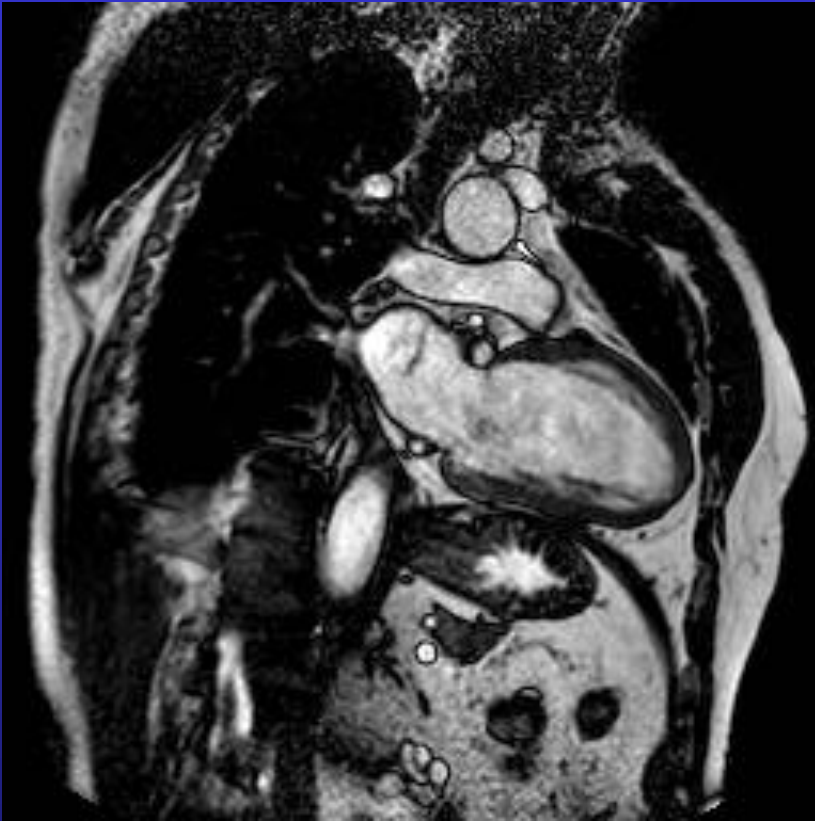
PSEUDOMASSE CARDIACHE

- Strutture anatomiche
- False immagini ecografiche
- Lipomatosi setto interatriale
- Trombi
- Ematomi di parete
- Pseudoaneurismi
- Granulomi
- Cardiomiopatia ipertrofica focale

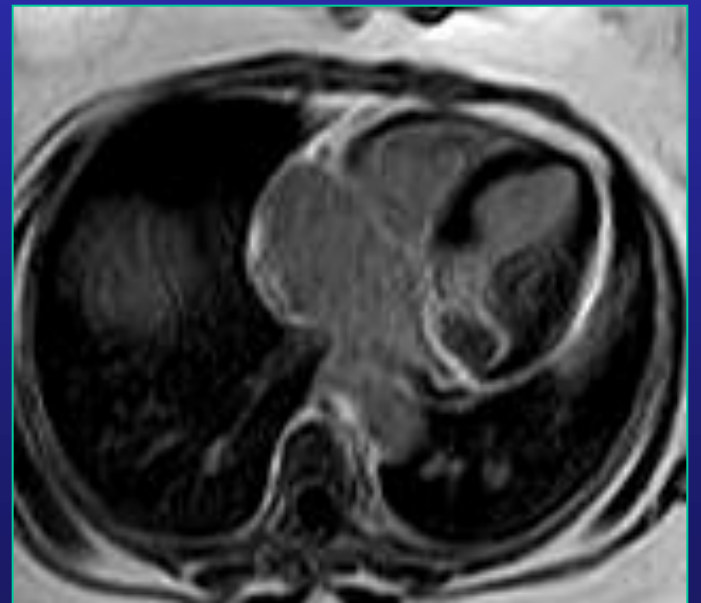
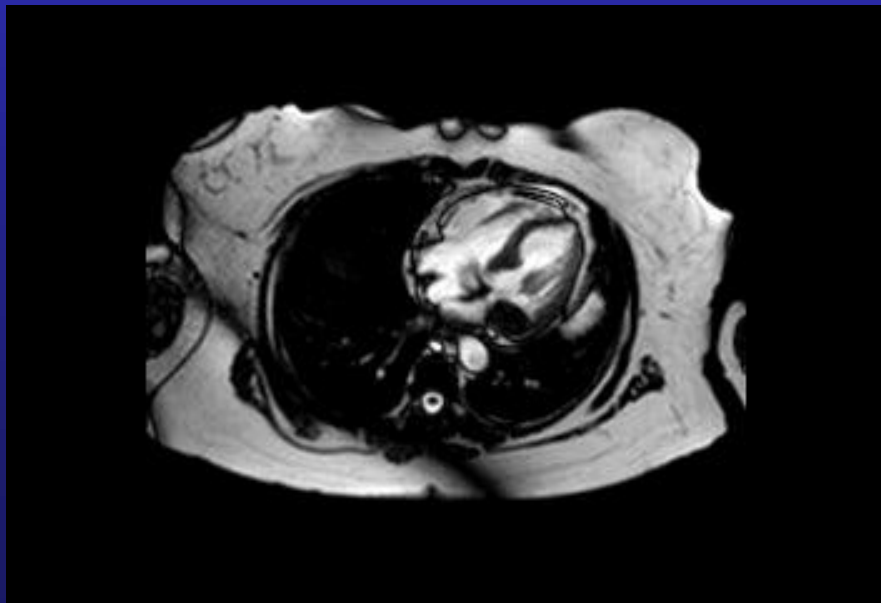
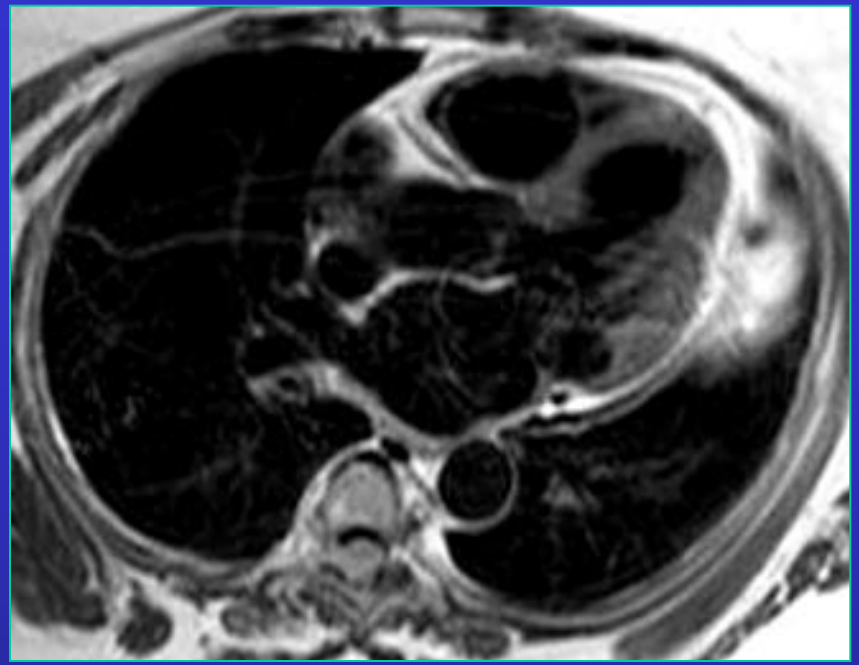
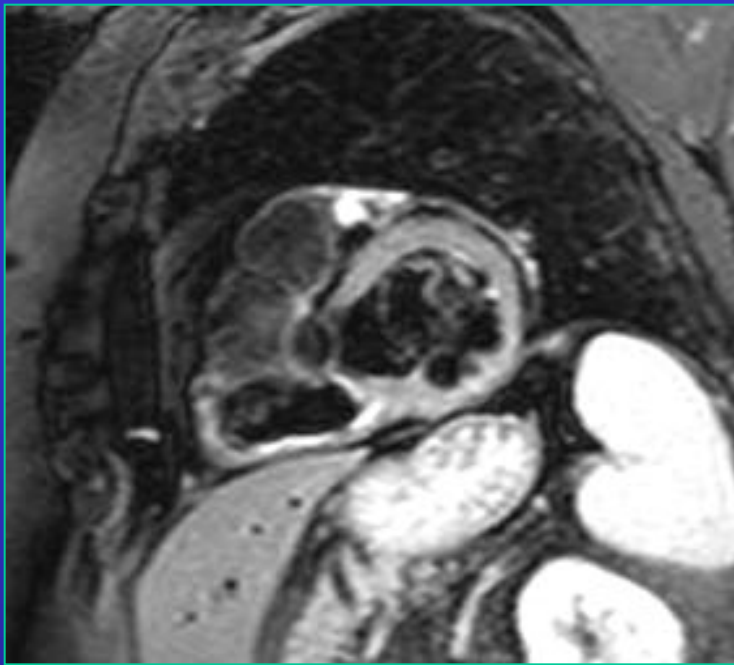


cresta terminale



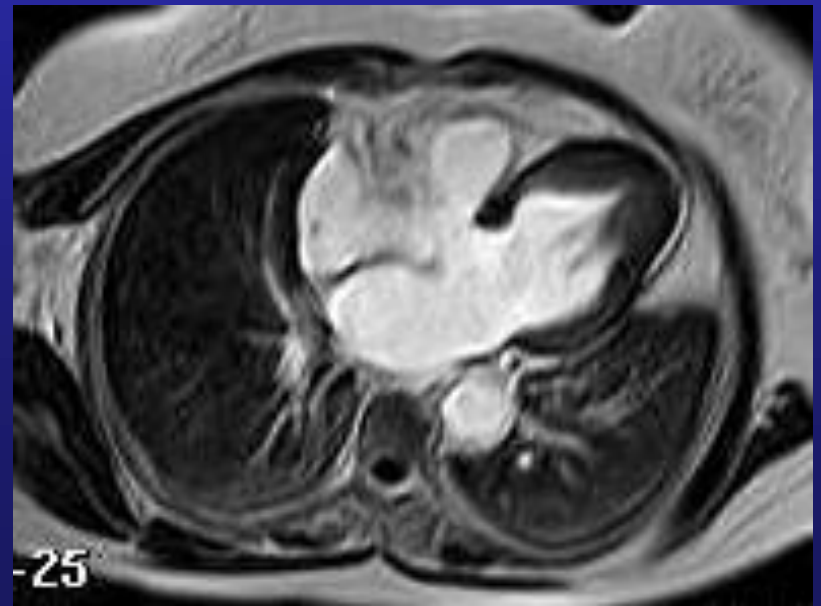
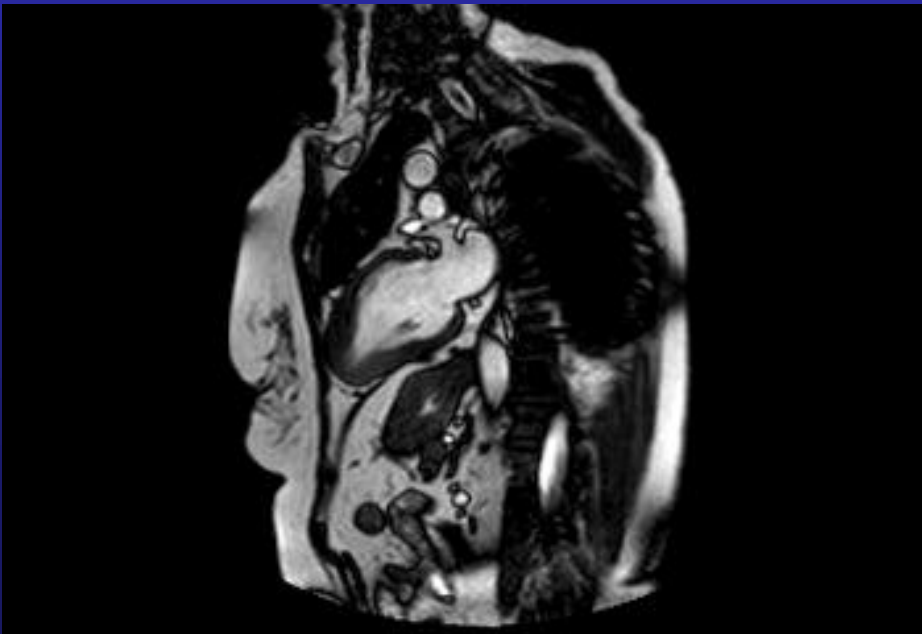
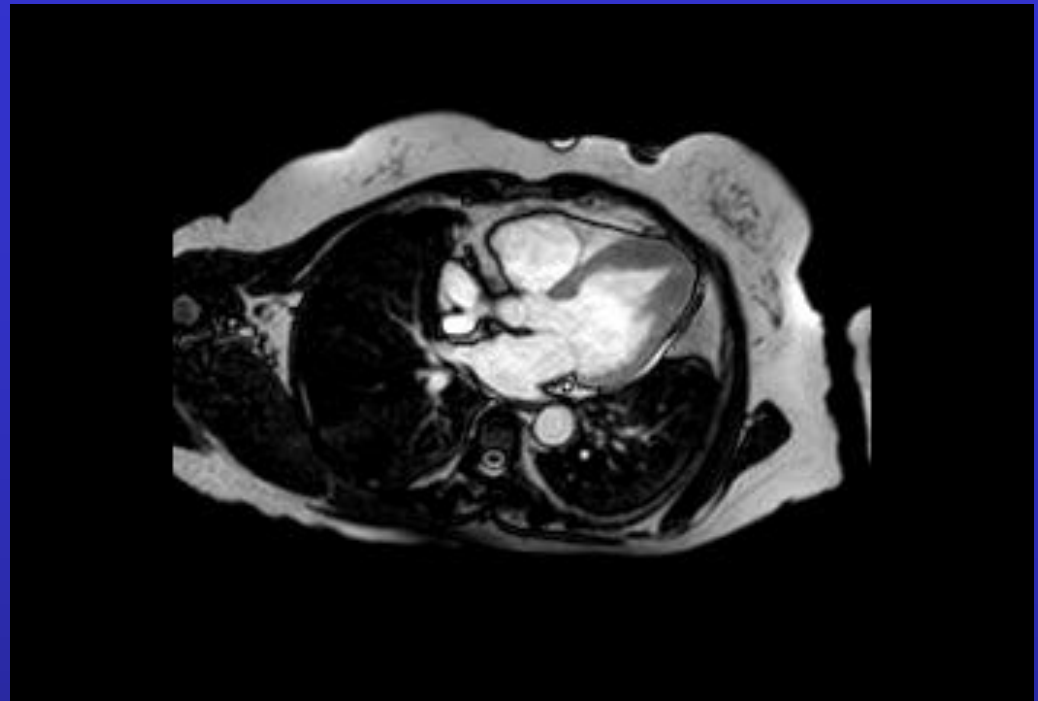


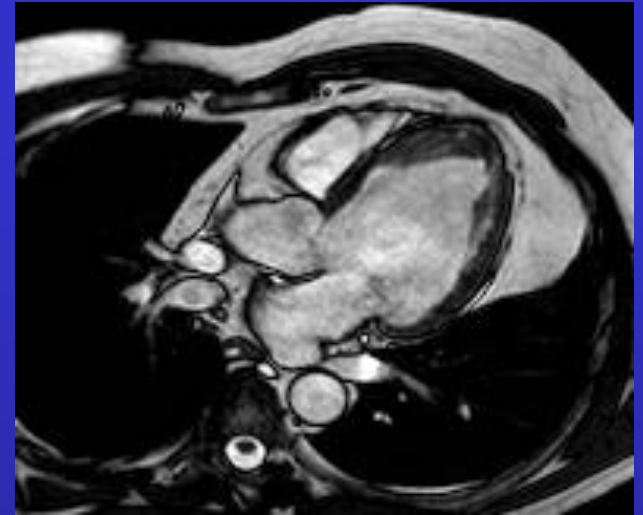
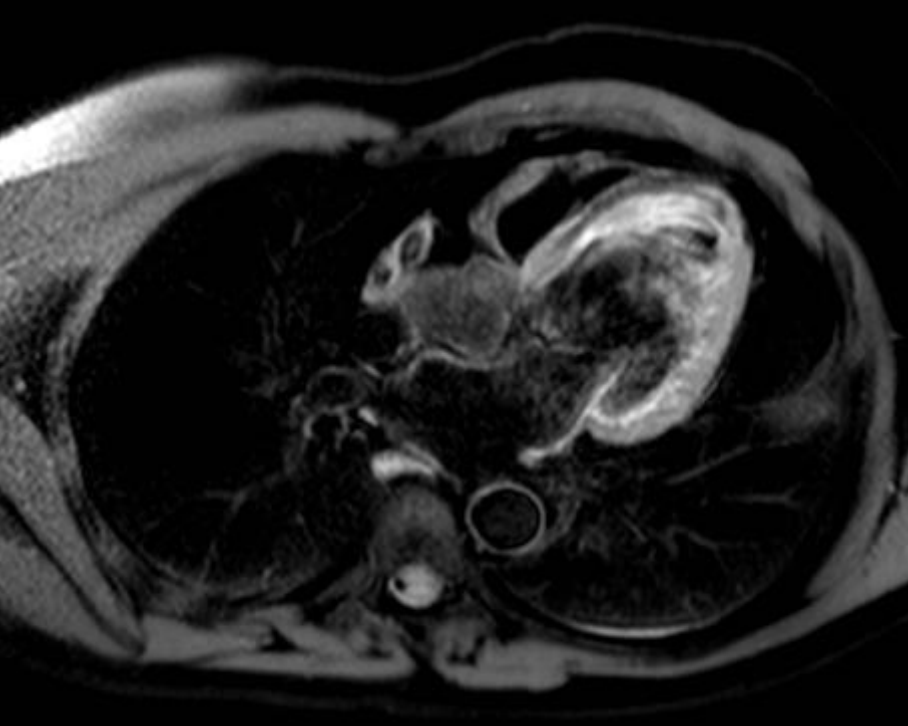
Cor triatriatum



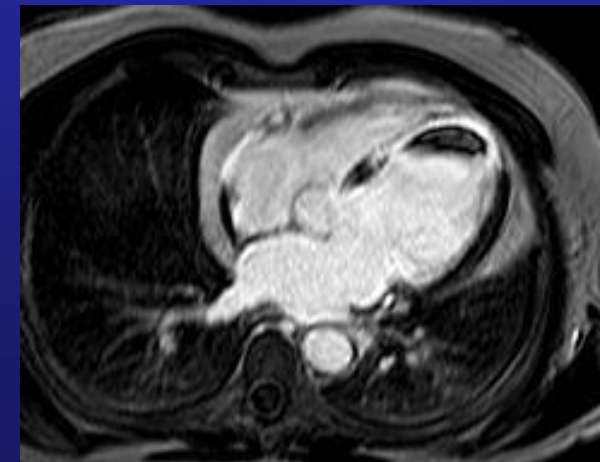
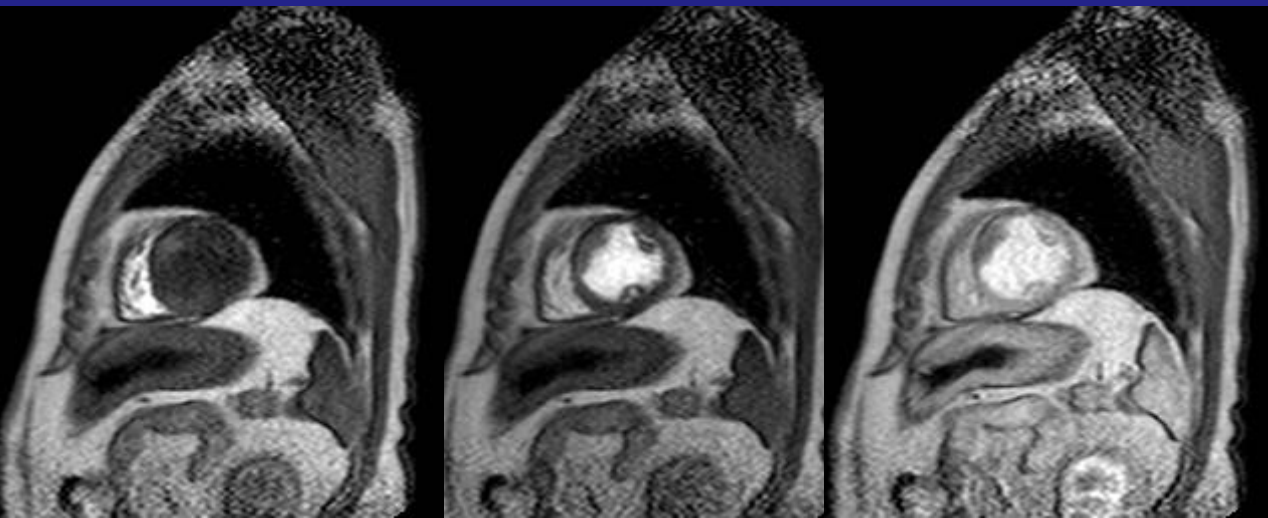
granuloma caseoso

HCM apicale

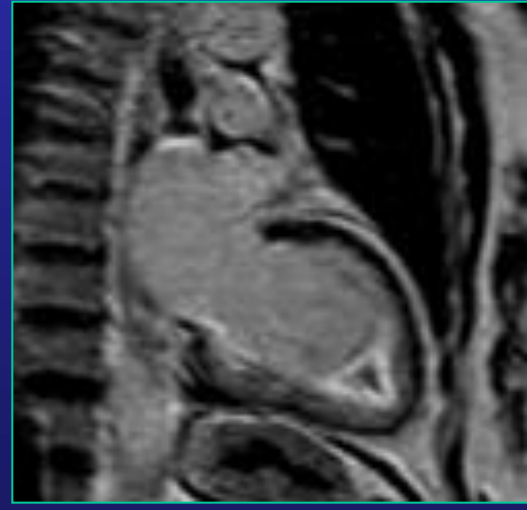
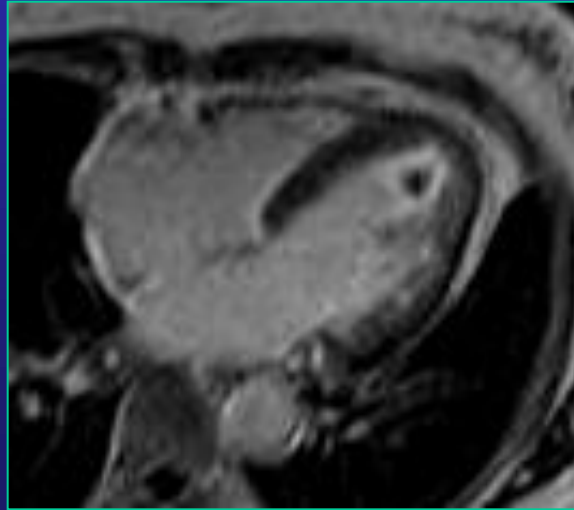
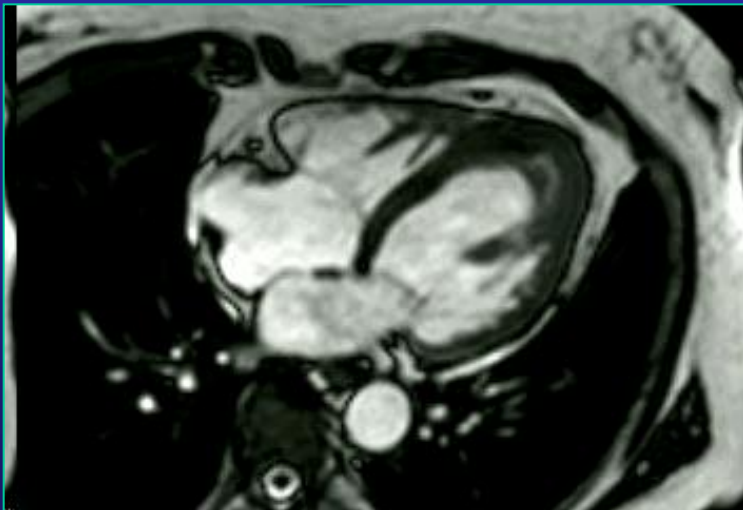
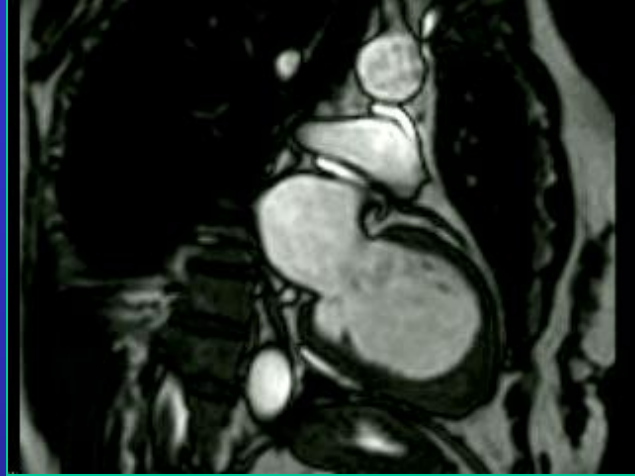
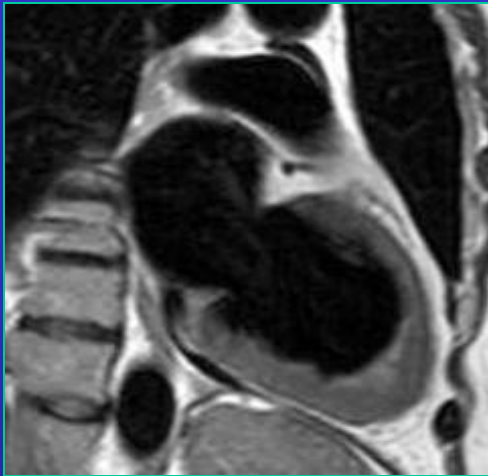




trombo su esito ischemico

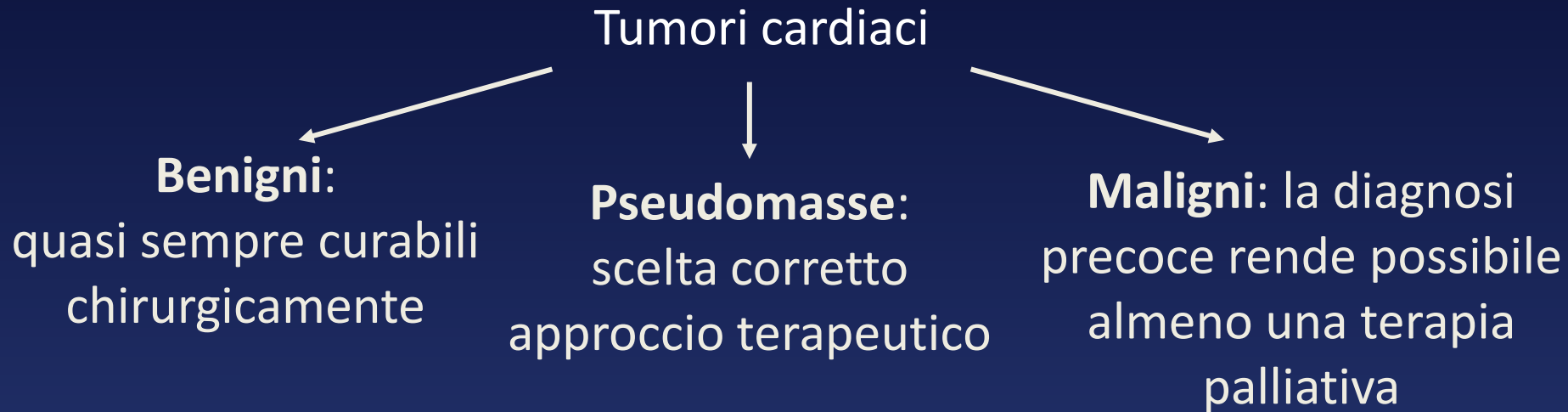


Loeffler disease



Ispessimento fibrotrombotico dell' endocardio ventricolare + ipereosinofilia

Conclusioni



Imaging: 1. Ecocardiografia

2. Cardio-RM - **Cardio-TC:**

- Presenza, localizzazione
- Estensione locoregionale, infiltrazione
- Rapporti con strutture cardiache e mediastiniche
- Effetti emodinamici del tumore
- Caratterizzazione tissutale, tipo di tumore