### Rad-path Conference 11/12/12

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## Case 1

• 77 year old female with history of colorectal and breast cancer, presents with 1-2 months of upper and lower back pain











# **Case 1 Imaging Findings**

- Lobulated pleural mass along the superior aspect of the left major fissure
- No chest wall invasion
- Intensely FDG avid on PET imaging

## **Case 1 Differential Diagnosis**

- Solitary fibrous tumor of the pleura
- Mesothelioma
- Metastatic disease
- Pleural Sarcoma

# Appropriateness Criteria

#### • Back pain with history of Stage 2 breast CA

Variant 2: Stage 2 carcinoma of the breast. Initial presentation, with back and hip pain.			
Radiologic Procedure	Rating	Comments	<u>RRL*</u>
Tc-99m bone scan whole body	9	To be done first to evaluate for presence of lesions suspicious for metastatic disease.	***
X-ray spine and hip	9	Radiographs obtained after bone scan if needed for further lesion characterization.	***
FDG-PET/CT skull base to mid-thigh	5	If bone scan is negative and the results of the PET examination will influence the use of systemic treatment.	***
Tc-99m bone scan whole body with SPECT hip and spine	1		***
Myelography and post myelography CT spine	1		****
CT hips and spine without contrast	1		***
CT hips and spine with contrast	1		***
CT hips and spine without and with contrast	1		****
X-ray radiographic survey whole body	1		***
MRI hip and spine without contrast	1		о
MRI hip and spine without and with contrast	1		0
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

## Case 1: Pathology

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### Case 2

• 52 year old male with urinary frequency, incidental finding seen on thoracic/lumbar spine MRI







# **Case 2 Imaging Findings**

 Right upper lobe pleural based mass adjacent to the posterior 4<sup>th</sup> rib

## **Case 2 Differential Diagnosis**

- Solitary fibrous tumor of the pleura
- Mesothelioma
- Metastatic disease
- Lymphoma

# Appropriateness Criteria

#### • Incidental pulmonary nodule

Variant 1:

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
CT chest without contrast	8	To detect occult calcifications, fat, bronchus sign, etc.	ବବବ
FDG-PET/CT whole body	8	If nodule is indeterminate on HRCT.	****
Transthoracic needle biopsy	8	If nodule shows contrast enhancement or PET scan is positive.	Varies
CT chest with contrast	6	Probably not indicated if PET is performed.	***
CT chest without and with contrast	б	Can look at washout.	ବବବ
Watchful waiting with CT follow-up	4	Reasonable at short interval.	Varies
MRI chest without contrast	2	Limited data.	о
MRI chest without and with contrast	2	Limited data.	0
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

Solid nodule  $\geq 1$  cm, low clinical suspicion for cancer.

## Case 2: Pathology

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### Case 3

• 70 year old female with weakness, fatigue



#### S/p surgical resection, f/u 5 years later





# **Case 3 Imaging Findings**

- Right anterior mediastinal mass on initial CT imaging
- Pleural-based right apical mass 5 years post resection

## **Case 3 Differential Diagnosis**

- Thymoma with pleural metastasis
- Lymphoma
- Mesothelioma
- Metastasis

# Appropriateness Criteria

#### • Nodule seen on chest radiograph

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Solid nodule ≥1 cm, low clinical suspicion for cancer.

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
CT chest without contrast	8	To detect occult calcifications, fat, bronchus sign, etc.	***
FDG-PET/CT whole body	8	If nodule is indeterminate on HRCT.	****
Transthoracic needle biopsy	8	If nodule shows contrast enhancement or PET scan is positive.	Varies
CT chest with contrast	б	Probably not indicated if PET is performed.	***
CT chest without and with contrast	6	Can look at washout.	***
Watchful waiting with CT follow-up	4	Reasonable at short interval.	Varies
MRI chest without contrast	2	Limited data.	0
MRI chest without and with contrast	2	Limited data.	0
<u>Rating Scale:</u> 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

## Case 3: Pathology

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### Case 4

• 46 year old male with left chest discomfort, thought by PCP to be musculoskeletal pain









# **Case 4 Imaging Findings**

• Multiple lobulated pleural and chest wall based masses with central mineralization

## Case 4 Differential Diagnosis

- Neoplasm sarcoma, mesothelioma
- Metastasis
- Hematoma
- Aggressive infection

# Appropriateness Criteria

#### • Chest pain, low probability of CAD

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
X-ray chest	9		÷
CTA coronary arteries with contrast	7		****
CTA coronary arteries with contrast with advanced low dose techniques	7		ବବବ
CTA chest (noncoronary) with contrast	7		***
US echocardiography transthoracic resting	7		0
SPECT MPI rest and stress	6		****
Tc-99m V/Q scan lung	5		***
MRA aorta without and with contrast	5	See statement regarding contrast in text under "Anticipated Exceptions."	0
X-ray rib views	5		***
MRA chest (noncoronary) without and with contrast	5	See statement regarding contrast in text under "Anticipated Exceptions."	0
MRA aorta without contrast	4		0
MRA chest (noncoronary) without contrast	4		0
X-ray barium swallow and upper GI series	4		***
X-ray thoracic spine	4		ବବବ
US abdomen	4		0
MRI heart with or without stress without and with contrast	3		0
MRA pulmonary arteries without and with contrast	3		0
MRA coronary arteries without contrast	3		0
MRA coronary arteries without and with contrast	3		о
US echocardiography transthoracic stress	3		0
US echocardiography transesophageal	2		0
MRI heart with or without stress without contrast	2		0
MRA pulmonary arteries without contrast	2		0
Coronary angiography with or without ventriculography	1		***
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 M	ay be appropriate; 7	,8,9 Usually appropriate	*Relative Radiation Lev

## Case 4: Pathology

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### Case 5

• 69 year old male with left lower quadrant pain and left shoulder pain



### Post-treatment



02 kBa/ml

# **Case 5 Imaging Findings**

- Intensely FDG avid, lobulated left pleural based mass
- Complete resolution in post-treatment PET CT imaging

## **Case 5 Differential Diagnosis**

- Neoplasm lymphoma, mesothelioma
- Metastasis
- Aggressive infection

# Appropriateness Criteria

#### • Persistent shoulder pain

 Variant 2:
 Radiographs noncontributory. Persistent significant pain. Physical examination and history nonspecific. Next study.

Radiologic Procedure	Rating	Comments	<u>RRL*</u>
MRI shoulder without contrast	9		0
CT arthrography shoulder	5	If MRI contraindicated.	**
US shoulder	5	If MRI contraindicated.	0
MR arthrography shoulder	1		0
CT shoulder without contrast	1		***
X-ray arthrography shoulder	1		÷
X-ray arthrography shoulder with anesthetic and/or corticosteroid	1		\$
Rating Scale: 1,2,3 Usually not appropriate; 4,5,6 May be appropriate; 7,8,9 Usually appropriate			*Relative Radiation Level

## Case 5: Pathology

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