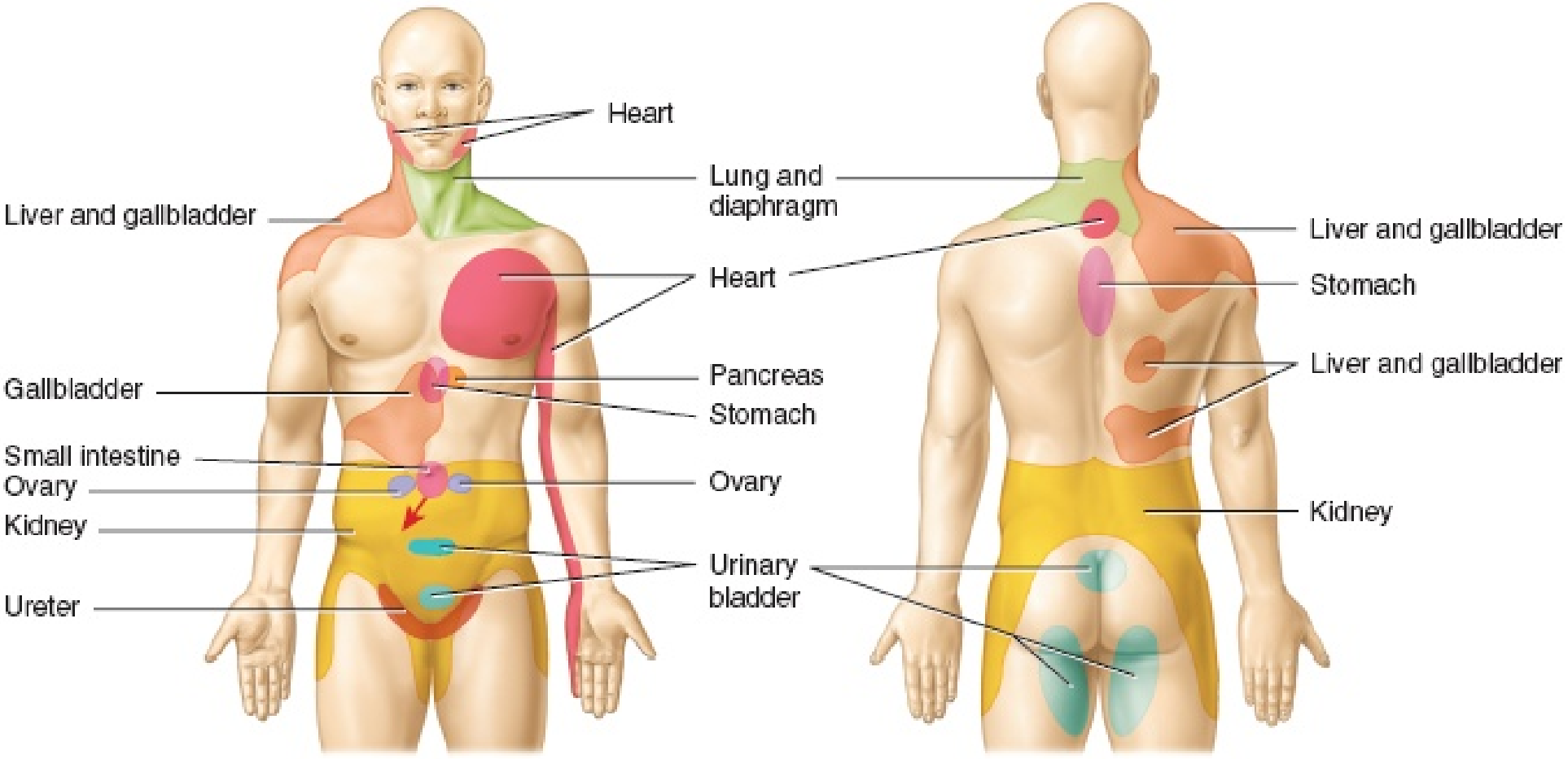
Medical Screening and Associated Nerve Palsies for the Shoulder and the Upper Extremity

Dr. Leal, PT, DPT, OCS, FAAOMPT

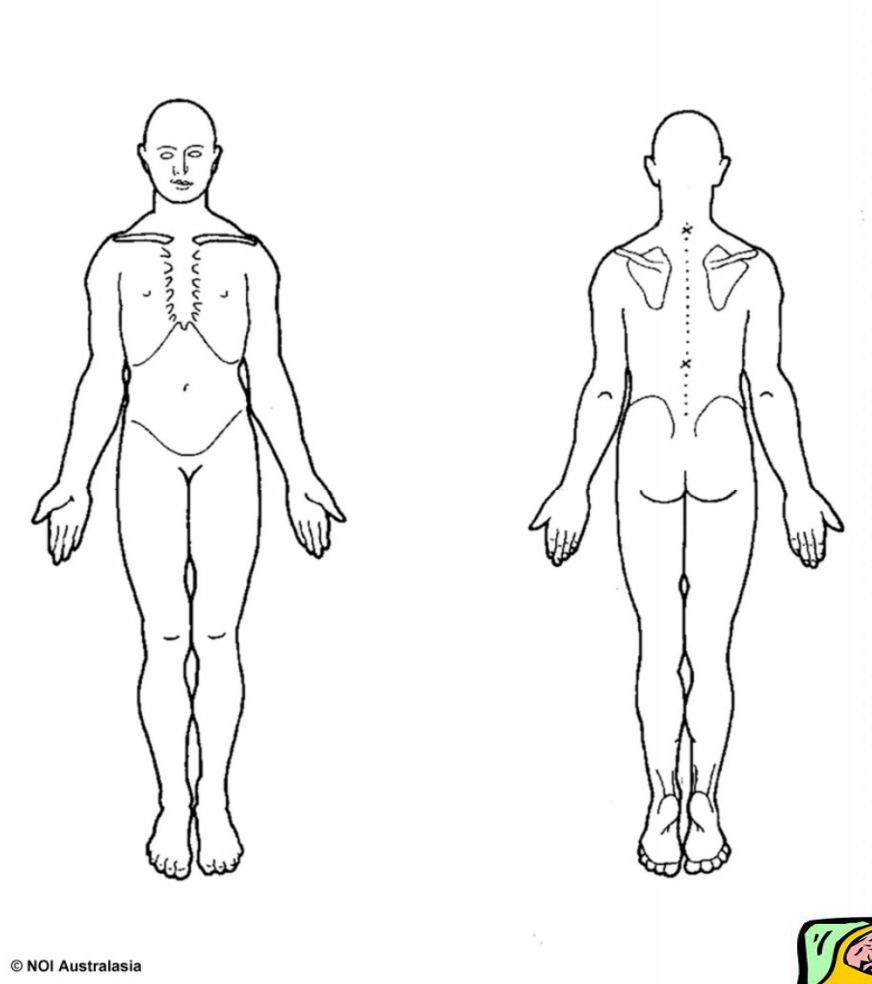
10/9/2017

28 slides



Body chart exercise

- Take your body chart and outline the commor organ / systemic referral patterns
- Next map out common referral patterns for the neck specifically facet related conditions
- Then map out common “shoulder” muscle patterns or areas and see what overlaps
- You can work in pairs and will be asked to present in 15 minutes (I will put yours up on the screen as you walk us through it)



Objectives

- **List** various systemic and viscerogenic potential causes of shoulder and upper extremity pain
- **Identify** systemic and viscerogenic pain referral patterns for the shoulder and the upper extremity
- **Describe** the signs and symptoms of potential systemic and viscerogenic sources
- **Summarize** the questioning needed during your patient interview required for screening of both systemic and viscerogenic sources

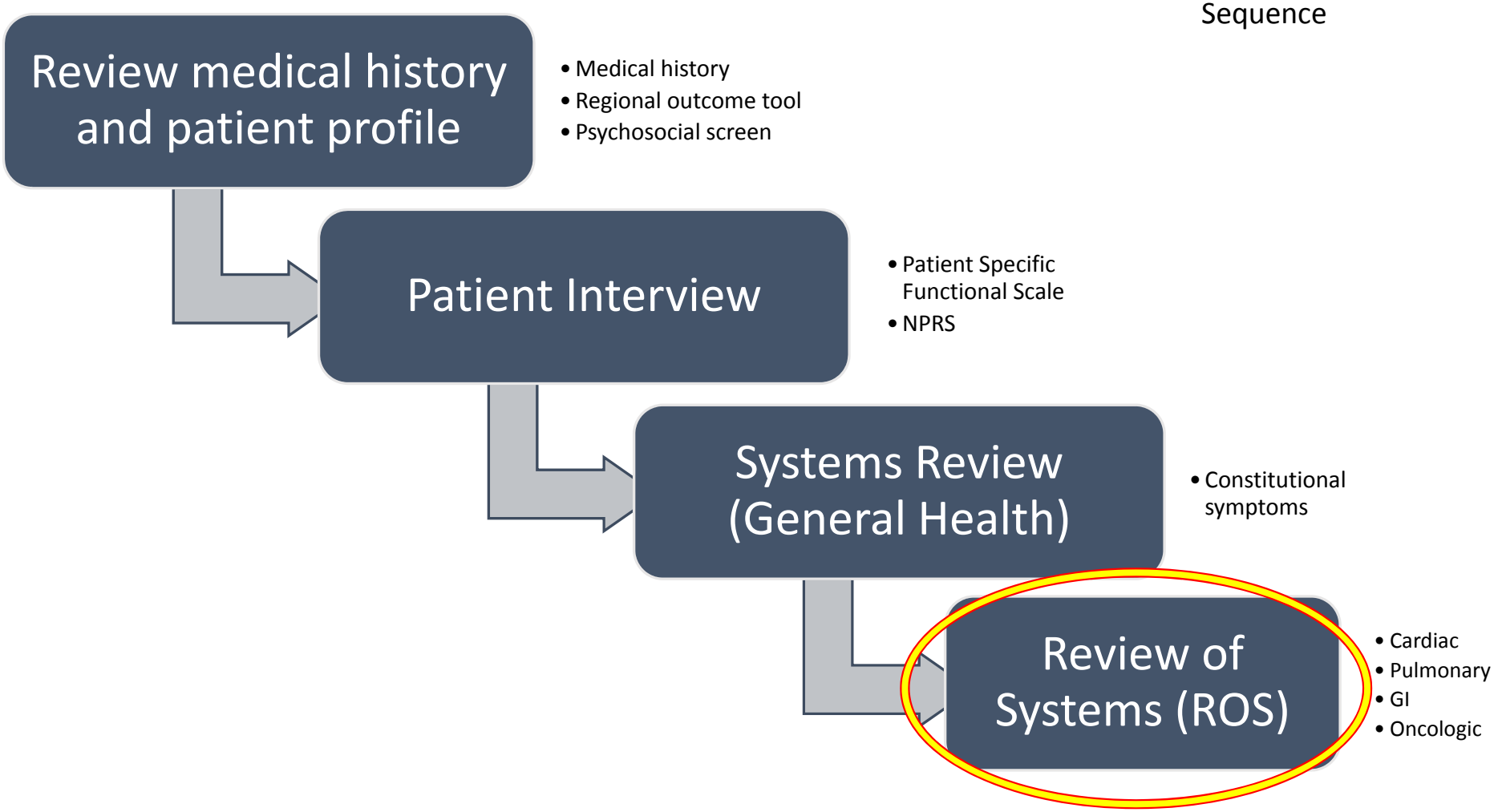
Major Systems

- Cardiac
- Pulmonary
- Gastrointestinal
- Oncologic

Systems Review

System	Conditions
Cardiac	Angina / Myocardial infarction Pericarditis Aortic Aneurysm
Pulmonary	Diaphragmatic irritation Pneumonia
Gastrointestinal	Hiatal hernia Peptic / duodenal ulcer Gallbladder disease Pancreatic disease Ruptured spleen
Oncologic	Cancer

Sequence



What triggers these series of questions as you do not need to ask these for every UE patient?

Constitutional Symptoms

- A good place to start

- ❑ Fever
- ❑ Diaphoresis (unexplained perspirations)
- ❑ Night sweats (can occur during the day)
- ❑ Nausea and or Vomiting
- ❑ Diarrhea
- ❑ Pallor
- ❑ Dizziness / Syncope
- ❑ Fatigue
- ❑ Weight loss

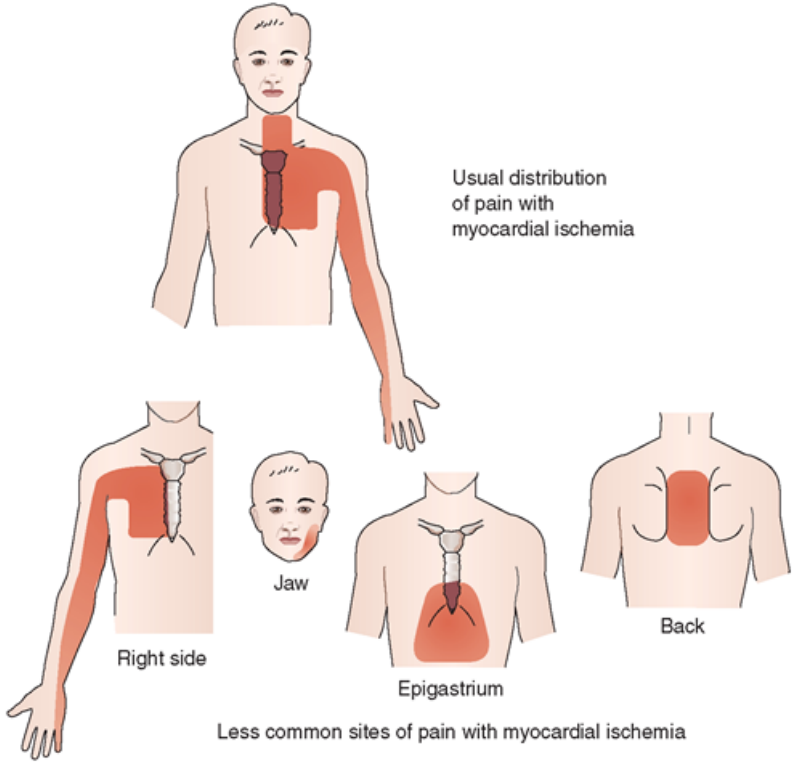
Screening for Potential Cardiac Issues

1. Have you ever noticed your shoulder pain increasing with exertion that does not require use of your shoulder, like climbing stairs?

2. Do you ever notice sweating, nausea, or chest pain when you have shoulder pain?

3. Does your mouth, jaw or teeth ever hurt when you have shoulder pain?

4. Is your pain changed if you lean forward or kneel with your hands on the floor, or by sitting upright?



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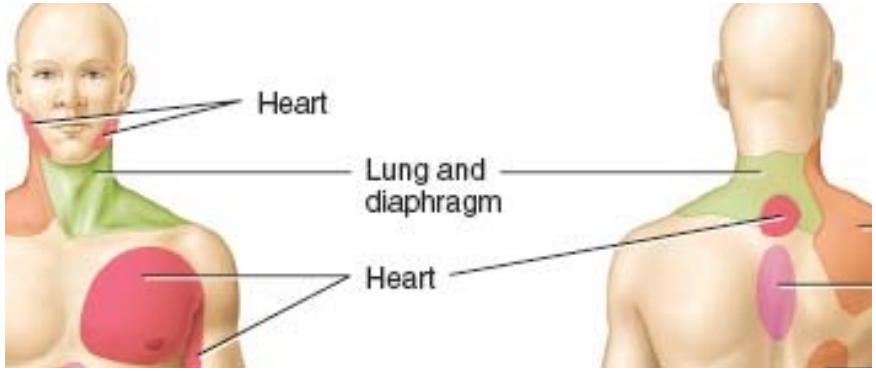
Screening for Potential Pulmonary Issues

1. Have you noticed your sputum production a blood tinged, rust, yellow or green color?

2. Does your shoulder pain increase when you laugh, cough or take a deep breath?

3. Does lying on your back affect your shoulder pain?

4. Does lying on your side affect your shoulder pain?



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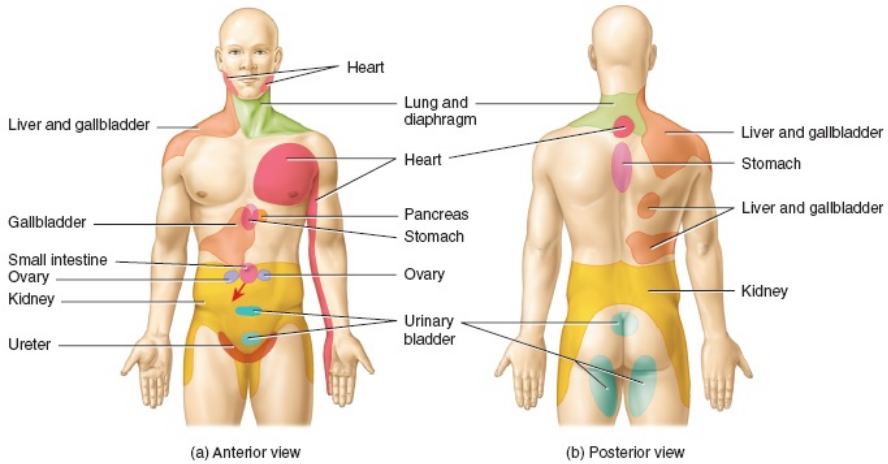
Screening for Potential Gastrointestinal Issues

1. Does eating either aggravate or alleviate your symptoms?

2. Do you have a feeling of fullness after 1-2 bites of food?

3. Have you had any nausea, vomiting, difficulty swallowing, loss of appetite, or heartburn since the shoulder started bothering you?

4. Have you experienced any injuries or trauma this last week



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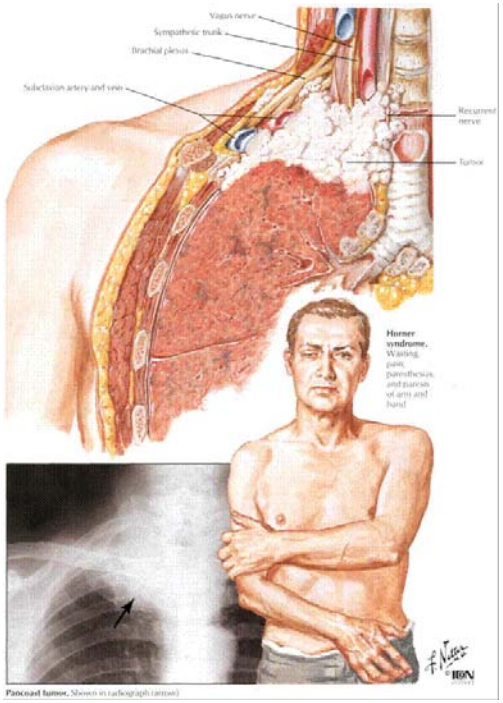
Screening for Potential Oncological Issues

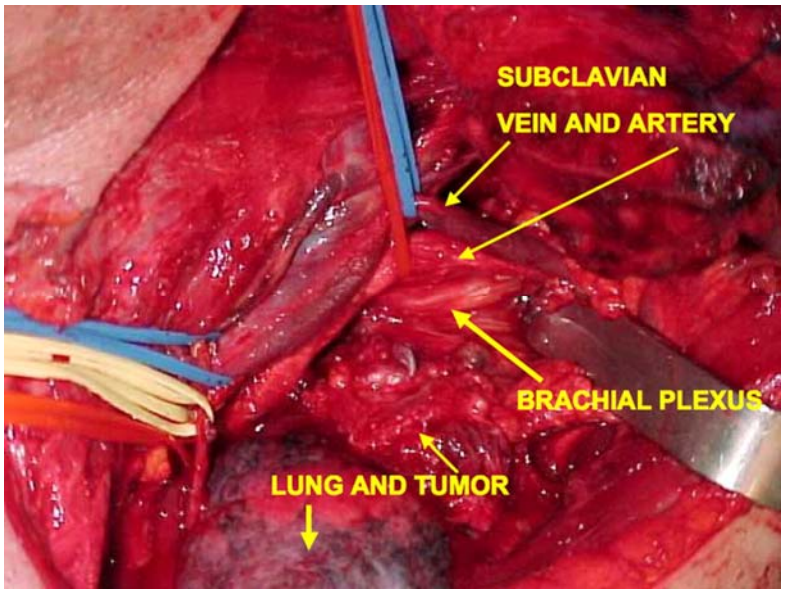
1. Suspicious or aberrant axillary or supraclavicular lymph nodes
2. Resisted shoulder motions cause breast area pain not shoulder pain
3. Obvious change in breast tissue (lumps, dimpling, discharge)
4. Cancer
    1. Primary bone neoplasm
    2. Secondary pulmonary neoplasm
    3. Pancoast tumor
    4. Breast CA



imgarcade.com

Pancoast Tumor

- Men > 50
- + history of tobacco usage
- Shoulder symptoms first prior to pulmonary symptoms (90% of the time)
- Tumor growth: into the thoracic inlet therefore causes shoulder symptoms, disc related symptoms in a C8/T1 distribution

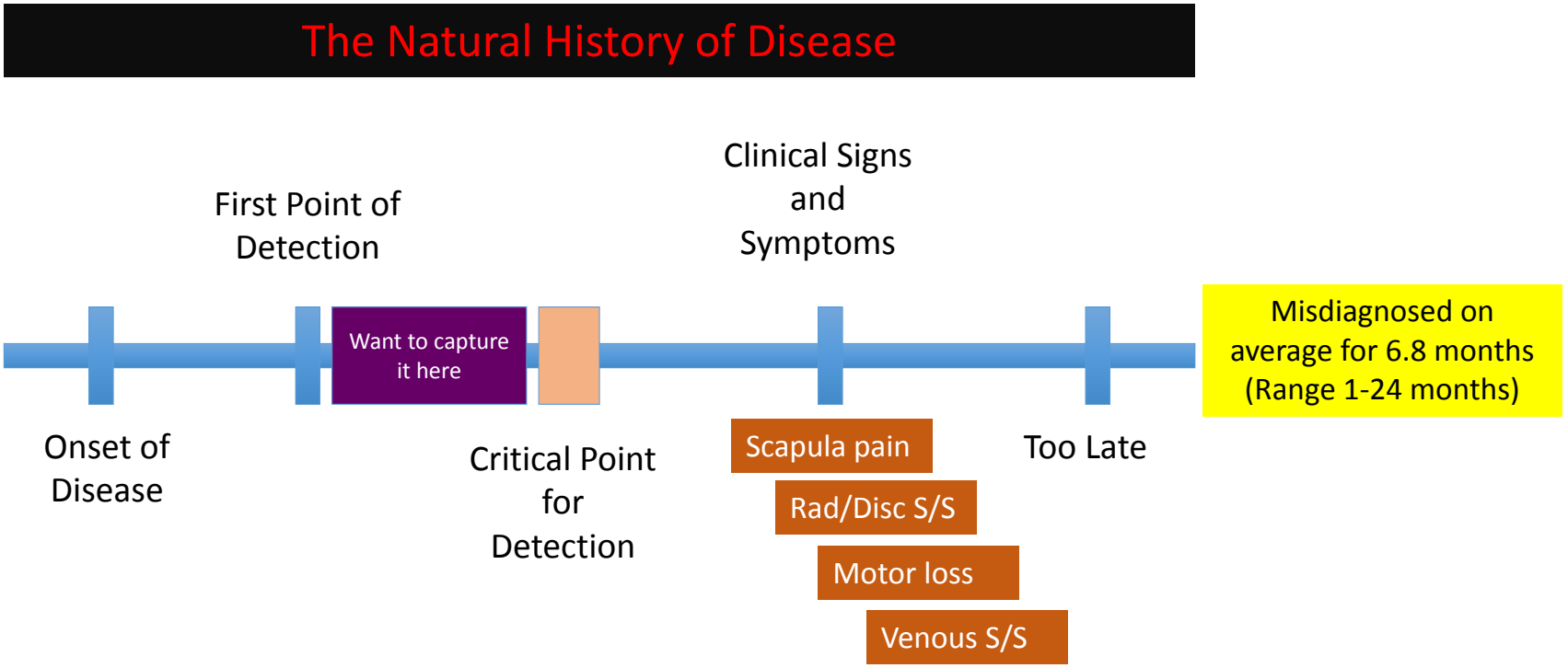


mmcts.oxfordjournals.org

Pancoast Tumor (Clinical Impression)

- Initially starts with nagging pain in the shoulder along the border of the scapula (irritating of the parietal pleura)
- As the tumor invades the thoracic inlet the pain becomes more of a burning extending down the arm into the ulnar distribution
- Intrinsic hand wasting and associated sensation and motor changes
- Once the subclavian vein is affected potential venous distention occurs ipsilaterally

Disease Progression (Pancoast Tumor)



**Chad Cook Course Notes Casa Colina 3/2008 & Obuchowski et al 2001 & Boissonnault 2005*

Additional Nerve Palsy's

- Spinal Accessory Nerve
- Suprascapular Nerve
- Long Thoracic Nerve
- Axillary Nerve

Spinal Accessory Nerve Palsy

- Trapezius atrophy
- Weakness of shoulder abduction
- Inability to shrug shoulders
- Dull pain, weakness and drooping of the shoulder
- Lack of scapular stabilization

[CASE REPORT]

MARTIN J. KELLEY, PT, DPT, OCS • THOMAS E. KANE, DPT • BRIAN G. LEGGIN, PT, DPT, OCS

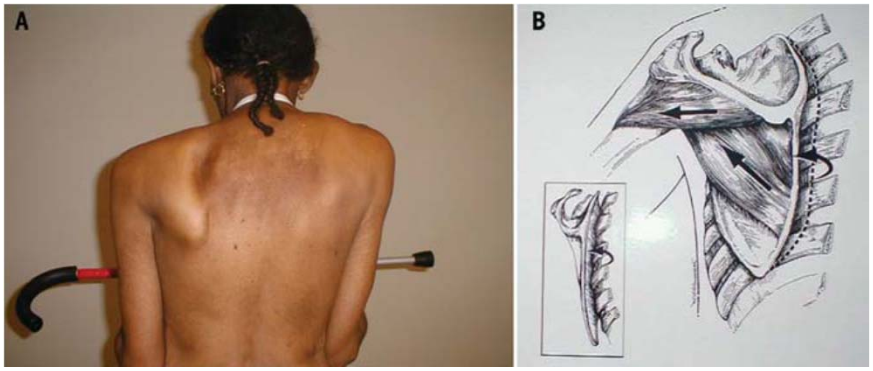
Spinal Accessory Nerve Palsy: Associated Signs and Symptoms

Spinal accessory nerve palsy (SANP) is common following neck dissection surgery or lymph node excision, blunt or penetrating trauma to the lateral neck region, and cervical stretch injuries. Spinal accessory nerve injury results in trapezius paralysis or dysfunction and a diagnostic cluster of signs and symptoms, including shoulder girdle depression, trapezius atrophy, scapular dyskinesis, loss of shoulder active abduction, and shoulder/neck pain. Establishing a diagnosis of SANP can be a clinical challenge and is often delayed or missed. Conservative treatment is usually initiated; however, nerve repair, nerve grafting, or neurolysis may be performed after penetrating or known iatrogenic injury. Chronic SANP may also be treated with a muscle transfer procedure.

The spinal accessory nerve is a cranial nerve originating as 2 parts: the accessory portion from the medulla and the spinal part from the lateral portion of the ventral column. The spinal portion ascends and enters the skull through the foramen magnum to join the accessory part. The spinal accessory nerve then exits through the jugular foramen at the base of the skull, passes obliquely, penetrating the upper third of the sternocleidomastoid (SCM) muscle. The spinal accessory nerve continues subcutaneously through the posterior triangle floor and enters the upper trapezius (FIGURE 1). Both the SCM and trapezius muscle receive motor innervation from the spinal accessory nerve. Although most authors agree the spinal accessory nerve provides the trapezius with primary motor innervation, not all agree regarding nerve anatomy. Kliener reported intraoperative electromyography findings revealing a distinct cranial branch of the spinal accessory nerve that separately innervates the upper trapezius. The cervical plexus (C2-C4) also innervates the trapezius providing some motor input in approximately 20% of the population.

Spinal accessory nerve injury commonly occurs during neck dissection surgery. Neck dissection surgery is performed to treat head and neck carcinoma and is categorized into 3 different procedures: radical

Scapular flip sign



Kelley et al JOSPT 2008

IJSPT

CASE REPORT

SHOULDER PAIN AND DYSFUNCTION SECONDARY TO NEURAL INJURY

Kari E. Brown, PT, DPT, SCS[1]
Laurie Stickler, PT, MSPT, OCS[2]

ABSTRACT

Study Design: Resident's Case Study

Background/Introduction: The reports of spinal accessory nerve injury in the literature primarily focus on injury following surgical dissection or traumatic stretch injury. There is limited literature describing the presentation and diagnosis of this injury with an unknown cause. The purpose of this case report is to describe the clinical decision-making process that guided the diagnosis and treatment of a complex patient with spinal accessory nerve palsy (SANP) whose clinical presentation and response to therapy were inconsistent with the results of multiple diagnostic tests.

Case Description: The patient was a 27-year-old female triathlete with a five month history of right-sided neck, anterior shoulder, and chest pain.

Outcome: Based on the physical exam, magnetic resonance imaging, radiographs, electrodiagnostic and nerve conduction testing, the patient was diagnosed by her physician with right sterno-clavicular joint strain and scapular dyskinesis and was referred to physical therapy. Care was initiated based on this initial diagnosis. Upon further examination and perusal of the literature, the physical therapist proposed a diagnosis of spinal accessory nerve injury. Intervention included manual release of soft tissue tightness, neuromuscular facilitation and sport-specific strengthening, resulting in full return to functional and sport activities. These interventions focused on neurological re-education and muscular facilitation to address SANP as opposed to a joint sprain and dysfunction, as initially diagnosed.

Discussion: Proper diagnosis is imperative to effective treatment in all patients. This case illustrates the importance of a thorough examination and consideration of multiple diagnostic findings, particularly when EMG/NCV tests were negative, the cause was not apparent, and symptoms were less severe than other cases documented in the literature.

Level of Evidence: Diagnosis, level 4

Key Words: Differential diagnosis, shoulder pain, spinal accessory nerve palsy, sterno-clavicular pain, triathlete

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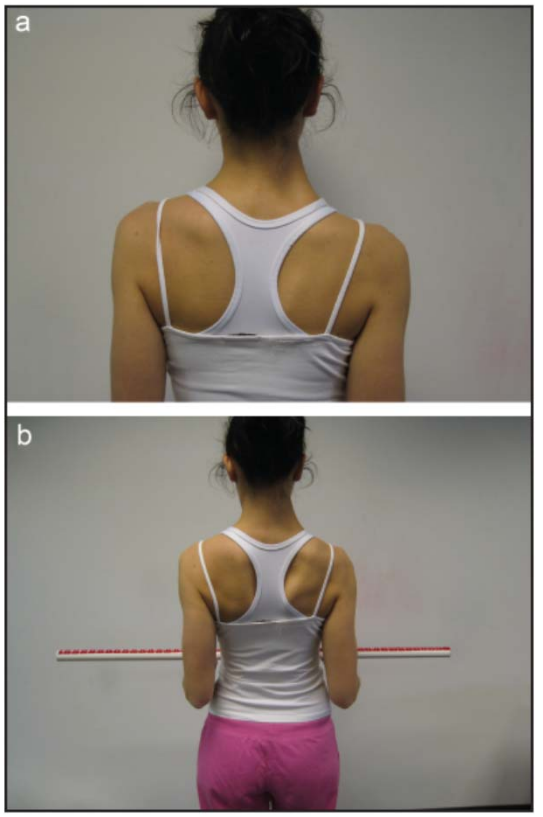


Figure 5a. *Scapular Flip Sign: Start Position.*
Figure 5b. *Scapular Flip Sign: End Position.*

Brown et al IJSPT 2011

Active: abduction in the coronal plane note the absence of medial winging

Kelley et al JOSPT 2008

Static:

http://www.drtomaino.com/article.php?id=144

Long Thoracic Nerve Palsy

- Serratus anterior weakness with winging – entire scapula drifts posteriorly and can be accentuated when you MMT shoulder flexion
- Most obvious inferiorly
- Loss of scapulohumeral rhythm

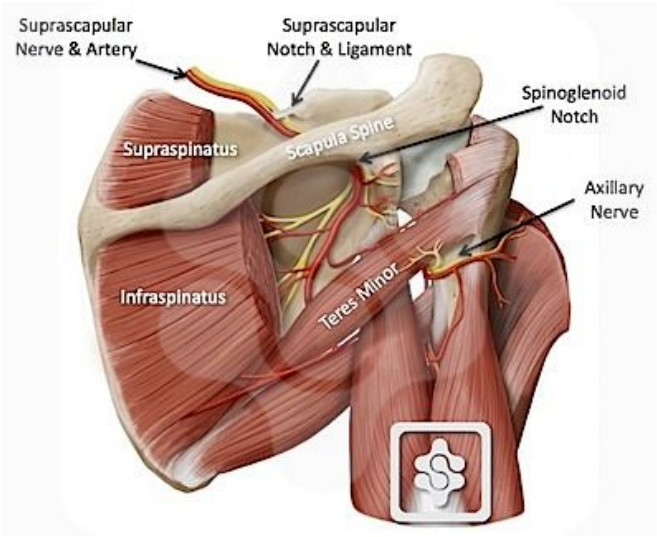
Kelley et al JOSPT 2008

http://www.drtomaino.com/article.php?id=144

Spinal Accessory versus Long Thoracic ?

Suprascapular Nerve Palsy

- Presentation similar to RTC tear due to loss of the supraspinatus and or infraspinatus muscles
- Abduction and ER strength loss
- Pain is deep and poorly localized
- How do you differentiate a RTC tear from a suprascapular nerve palsy?

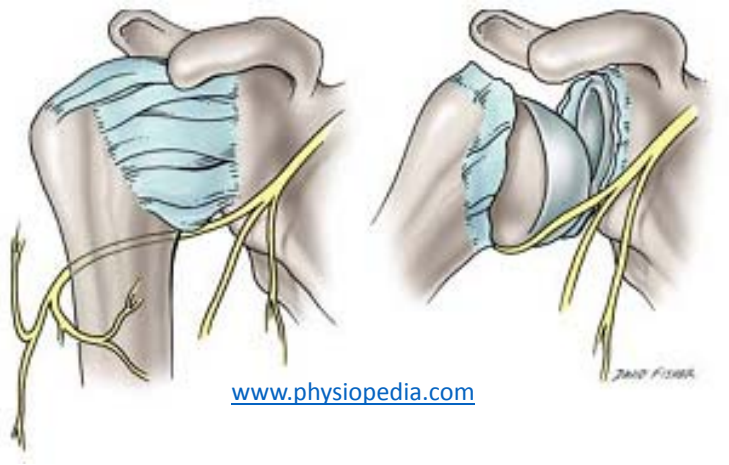


https://www.shoulderdoc.co.uk/article/1250

What is his diagnosis?

Axillary Nerve Palsy

- Weakness of shoulder abduction and flexion (some sources report ER as well due to teres minor)
- In general deltoid weakness and or paralysis is the most common sign and or symptom
- Lack of sensation of the lateral aspect of the upper arm
- Mechanism: often times post anterior dislocation but can occur with an insidious onset and or related to sports injuries



www.physiopedia.com

Via anterior dislocation

Apprehension / Relocation Test

- https://www.youtube.com/watch?v=xEtzVcV9Z5Q

Summary Slide

- Be mindful of the signs and symptoms of each organ system and their potential referral patterns
- Be able to differentiate the different types of nerve palsies based on the patient interview and physical examination strategies
- Your medical screen should identify potential visceral structures that have the potential to mask musculoskeletal symptoms and referral patters
- Upper extremity problems (shoulder) may look like an MSK issue AND also have concurrent visceral or systemic issues

1 Minute Paper

Front

Name

1 sentence summary of the information that was just presented in the last 45 minutes

Back

1 concept that is still not clear and you would like more clarification on

Break
(10 minutes)