Chapter 9

Non-specific upper limb pain

When a patient presents with pain in the upper limb the practitioner needs to establish early whether this is i) referred ii) one which may be related to a systemic manifestation or iii) a local musculoskeletal problem. When considering referral you need to exclude early in your investigation the possibility of one of the visceral structures that refer to the shoulder and arm regions.

A key question in your case history is to ask the patient if the symptoms, in particular pain, are clearly altered by movement. Referred pain tends to make little difference with movement and the symptoms would not come and go abruptly when only musculoskeletal structures are involved.

The nerve supply to the upper limbs originate from the cervical spine, therefore you need to consider the integrity of this area and the possibility referral. By doing so, if the pain is referred from the cervical spine then one would expect to have a more consistent neurological pattern, not only manifesting as pain but also the loss of power, change in reflexes and sensory changes to the skin.

If you identify such manifestations then you will need to refine further your line of investigation. Is the referral pattern related to a particular nerve root lesion? If so, you will expect a dermatomal distribution of symptoms. For example, a C6 nerve root lesion will affect the skin in the anatomical "snuffbox" region. Furthermore a C6 nerve root lesion will also affect the reflexes of brachioradialis and there will be weakness in the muscles supplied by this nerve root. If the referral pattern does not conform to one of the dermatomes then consider a lesion that might affect a peripheral nerve.

Remember that most peripheral nerves are made up of contributions of several nerve roots "bunched together" to supply a wider area depending on the location of the lesion. For example if the median nerve is affected high up in the arm a large patch of the skin will be affected in the anterior part of the forearm and palm of the hand. Similarly if the median nerve is affected at the wrist (e.g. Carpal tunnel syndrome) then only the skin of the palm (excl. 5^{th} digit) and intrinsic muscles of the thumb will be affected.

If the pattern does not conform to a nerve root distribution, or peripheral nerve, then consider other possibilities albeit more rare.
Could the neurological symptoms be stemming from a lesion within the cervical spinal cord? This is not an unlikely situation as cervical myelopathy is more common than the thoracic and lumbar regions. The mobility, and hence vulnerability, of this part of the spine make it more prone to degenerative or traumatic lesions.

If cervical myelopathy is a suspicion then, depending on the location and extent of the lesion, you may find more distal phenomena involving the legs due to long tract involvement. In the event where a pattern of hemiplegia is identified also consider cortical lesions, including cerebrovascular events. When the upper limbs are involved there is another anatomical region which is prone to lesions, that is the brachial plexus.

The thoracic inlet, subacromial and axillary regions are vulnerable areas and must be considered. These regions may be affected by regional musculoskeletal/mechanical derangements e.g. compression by the scalene muscles or the presence of a cervical rib. The Brachial plexus can also be affected by lesions of the subclavian artery, apical lung tumours or infiltration of the regional lymph nodes e.g. the supraclavicular or the axillary. Therefore, when discerning your differential diagnosis you will be recalling your basic knowledge of anatomy and pathology.

If a referral pattern does not conform to what we discussed above i.e. dermatomal, peripheral nerve, brachial plexus, long tracts or cortical patterns, then we need to think of the possibility that the referral may result from a visceral pathology. A key indicator in your differential diagnosis is that a visceral referral will almost always refer as pain thus sparing motor and sensory functions. There are several intrathoracic and intra-abdominal visceral structures that are often implicated in the referral of pain into the upper extremity. These are listed in the adjacent table.

Cardiac and vascular causes:
- Myocardial infarction
- Angina
- Pericarditis
- Bacterial endocarditis
- Aortic aneurism

Pulmonary causes:
- Embolism
- Pneumothorax
- Pancoast's tumour
- Pneumonia
- Tuberculosis

Lymphatic:
- Mediastinal and supraclavicular infiltration

Other:
- Mastodynia
- Axillary infiltration from breast cancer
- Gallbladder disease
- Diaphragmatic abscess or hernia

With upper limb pain you must always consider and exclude the possibilities of malignancy, either primary or metastatic. The cervical spine is a frequent area for metastasis. The following table lists some of the commonest primary cancers.

Primary cancers that often metastasise to the spine:
- Lung
- Prostate
- Beast
- Thyroid
- Gastrointestinal
- Renal
- Melanoma

With metastatic manifestations, patients often report pain that is of gradual onset and becoming progressively worse. In some cases a patient may report acute pain and if cancer is a suspicion, this may be the result of a pathological fracture.

Similarly, if a patient fails to response to conservative treatment for an apparent musculoskeletal condition, if the symptoms are getting progressively worse, if systemic symptoms are present or if analgesia is offering little relief then this must be considered a red flag. In addition to malignancies, also consider autoimmune connective tissue disease or other systemic conditions.

Having considered referred manifestation of pain into the upper limbs let us now explore regional musculoskeletal conditions or even musculoskeletal manifestations of systemic conditions.

An in-depth case history is vital, particularly with shoulder problems due to their complex anatomic structure. How did the symptoms appear; was it associated with a particular physical event or getting progressively worse and for no apparent reason? Find out which movements, activities or postures aggravate or relieve the shoulder pain. Can the patient or you the examiner identify the exact location of the pain or is the pain affecting the whole of the joint and associated musculoligamentous structures?

Remember that when we refer to the shoulder we are essentially implicating a number of joints and structures.

Structures associated with the shoulder:

- Glenohumeral joint
- Acromioclavicular
- Sternoclavicular
- Scapulothoracic surfaces
- Subacromial space

Muscles and their tendinous attachments:

- Rotator cuff
- Biceps
- Triceps
- Pectoralis M & m
- The glenoid labrum

Ligaments:

- Acromioclavicuar
- Sternoclavicular
- Coracoclavicular
- Sternoclavicular
- Transverse humeral ligament

Let us review some clinically important structures when presented with pain affecting the elbow and forearm area. Like the shoulder, the elbow is also a very mobile joint at the expense of strength and stability.

The medial and lateral epicondyles of the humerus are regions where large number of muscles and tendon converge to attach onto relatively small bony regions. Most of the flexors of the wrist and digits attach onto the medial aspect of the elbow and conversely all the extensors of the wrist and digits attach onto the lateral aspect of the elbow. Hence the frequently encountered medial and lateral epicondylits, commonly referred to as golfers or tennis elbow.
Another sensitive and often exposed structure is the ulnar nerve as it passes behind the medial epycondyle where repetitive flexion and extension causes friction and inflammation. It is also prone to injury from trauma and pressure.

The wrists and hands are perhaps the most used parts of our musculoskeletal structure, performing both heavy duty activities and finely tuned tasks. Large number of tendons on their way to the wrist and digits need to converge and pass under the flexor and extensor retinaculae of the wrist. Numbness in the palm and weakness in the intrinsic muscles performing flexion - especially the thumb – often indicate carpal tunnel syndrome. If unilateral, this may be a result of excessive mechanical use or predisposed by a systemic condition like rheumatoid arthritis and hypothyroidism often seen bilaterally.

The hand is also affected by Heberden’s nodes which are deforming bony exostoses seen at the margins of the interphalangeal joints. They tend to affect the patient’s dexterity and use of hand and unlike rheumatoid arthritis they are less symptomatic.

The following tables list the most commonly occurring conditions affecting the upper limbs.

Common pathologies affecting the upper limbs

Conditions of the shoulder:

- Adhesive capsulitis
- Biceps tendinitis
- Biceps tendon rupture
- Rotator cuff tear
- Painful arc syndrome
- Subacromial bursitis
- Acromioclavicular or glenohumeral joint dislocation.
- Osteoarthritis
- Labral tears/SLAP lesions
- Referral from cervical spine (spondylosis, radiculopathy, myelopathy).
- Fracture (humeral head/neck)

Conditions of the elbow:

- Medial or lateral epicondylitis
- Cubitus valgus or varus
- Osteoarthritis
- Osteochondritis dessicans
- Olecranon bursitis
- Ulnar neuritis
- Rheumatoid arthritis
- Referral from cervical spine (spondylosis, radiculopathy, myelopathy).
- Fracture (olecranon)

Conditions of the wrist and hand:

- Rheumatoid arthritis
- Osteoarthritis
- Carpal tunnel syndrome
- Dupuytren's contracture
- Tenosynovitis
- Mallet or trigger finger
- Brachial plexus lesions (including TOS).
- Peripheral neuropathy
- Fracture (Colles, reverse Colles and Smith's).

Other conditions affecting the upper extremity:

- Cardiac referral
- Multiple sclerosis
- Motor-neurone disease
- Inflammatory myopathies
- Fibromyalgia
- Osteoporosis
- Osteomyelitis

PAIN form
EXERCISE

You are presented with a patient complaining of non-specific or generalised upper limb pain.
Complete the following sections beginning with the most important information. You may use additional paper if you wish to fully complete these sections.

Question sheet

NON SPECIFIC/GENERALISED UPPER LIMB PAIN

IDENTIFY SPECIFIC CASE HISTORY QUESTIONS

A .....
B .....
C .....
D .....
E .....
F .....
G .....
H .....
I .....
J .....

DESCRIBE YOUR PHYSICAL EXAMINATION PROCEDURE

A .....
B .....
C .....
D .....
E .....
F .....
G .....
H .....
I .....
J .....

IDENTIFY POSSIBLE PATHOLOGIES FOR THIS PRESENTATION

A .....
B .....
C .....
D .....
E .....
F .....
G .....
H .....
I .....
J .....

WHAT FURTHER DIAGNOSTIC PROCEDURES COULD BE CONSIDERED?

A .....
B .....
C .....
D .....
E .....
F .....
G .....
H .....
I .....
J .....

PAIN form
EXERCISE

You are presented with a patient complaining of non-specific or generalised upper limb pain.
Complete the following sections beginning with the most important information. You may use additional paper if you wish to fully complete these sections.

Answer sheet

NON SPECIFIC/GENERALISED UPPER LIMB PAIN

IDENTIFY SPECIFIC CASE HISTORY QUESTIONS

A Do they have any occupational and sports-related factors?

B Are there any neurological effects ie. numbness, weakness, poor co-ordination?

C Is there family history or rheumatic or connective tissue disease?

D Do they have a history of spinal problems or neck injuries?

E Is it unilateral or bilateral?

F Is the pain localised in joints, the muscles, bone, ligaments, tendons, near big vessels or non-specific?

G Is the pain altered by movement of the arm?

H Is the pain altered by spinal movements or changes in posture?

I Does the patient have any vascular problems?

J Are there similar symptoms in other parts of the body?

DESCRIBE YOUR PHYSICAL EXAMINATION PROCEDURE

A General observation and close inspection

B Palpation

C Active movement

D Passive movement

E Active-resisted movement and assessment of muscle power

F Functional tests

G Neurological tests

H Vascular tests

I Orthopaedic tests

J

IDENTIFY POSSIBLE PATHOLOGIES FOR THIS PRESENTATION

A Cervical nerve root compression

B Brachial plexus lesions

C Fractures

D Arterial or venous disease

E CVA

F Secondary deposits

G Inflammatory connective tissue disease

H Inflammatory myopathies

I Osteoporosis

J Peripheral neuropathy

WHAT FURTHER DIAGNOSTIC PROCEDURES COULD BE CONSIDERED?

A X-rays of specific joints

B X-rays of lumbar spine and pelvis

C MRI of specific joints

D MRI of lumbar spine and pelvis

E Blood tests

F

G

H

I

J

Case history – shoulder pain

A 49 year old window cleaner presents with pain in his left shoulder. He first noticed the pain a few months ago but initially it was intermittent and it did not prevent him doing his work. Lately the pain is experienced for most of the day and occasionally it has been "throbbing" at night. He also said that the pain sometimes spread down his arm which gave him some concerns, fearing it might be his heart.

When asked about his activities he described what the window cleaning work entailed. As he is left handed he uses this hand to hold the window cleaning blade and with the right hand a bucket with water. He said that when he cleaned windows that were high, he experienced sharp pains in his shoulder on raising his arm above 90 degrees.

When his shoulder was aggravated with heavy work his arm felt heavy with pain spreading down his arm, the front of the chest, the left side of his neck and behind his scapula.

Questions

Q1. Identify common musculoskeletal conditions which affect:

1. The acromioclavicular joint.
2. The Glenohumeral joint.
3. The long head of the biceps brachi muscle.

Q2. For each of the conditions listed name and describe a reliable orthopaedic test or procedure.

Q.3 Identify musculoskeletal conditions that can refer pain into the shoulder region.

Q4. Identify systemic causes of shoulder pain.

Q5. Analyse the predisposing factors associated with this patient's work that may have contributed to the development of his condition.

References, Bibliography and Recommended reading

Jamison J R (2007), Differential Diagnosis for primary Practice, 2nd edn., Churchill Livingstone. (ISBN-13: 978-0443102875)

Goodman C G, Snyder T K (2007), Differential Diagnosis for Physical Therapists: Screening for Referral, 4th edn, Saunders. (ISBN: 978-0721606194)

Seller R H, Differential Diagnosis of Common Complaints, Saunders, 3rd edn, 1996 ISBN: 978-1416029069

Beck R, et al (2003), Tutorials in Differential Diagnosis, 4th edn., Churchill Livingstone. ISBN: 978-04430615-7-8

DVD-VIDEO recordings
Syrimis A (2007), Clinical Examinations DVDs, Bloomsbury Educational Ltd,
ISBNs:

- Respiratory system examination: 978-0-9551291-0-0
- General system examination: 978-0-9551291-1-7
- Cardiovascular system examination: 978-0-9551291-2-4
- Abdominal system examination: 978-0-9551291-3-1
- Peripheral nervous system examination: 978-0-9551291-4-8
- Cranial nerves examination: 978-0-9551291-5-5
- Musculoskeletal examination: 978-0-9551291-6-2
- Case History Taking: 978-0-9551291-7-9
- Clinical Examinations: Complete DVD series: 978-0-9551291-9-3

http://www.clinicalexams.co.uk/student-resources-section.htm
(For additional lecture notes, Q&As and images, Username & Password provided in class)

Boon N A, Colledge N R, Walker, B & Hunter J A A (2006), Davidson's Principles and Practice of Medicine. 20th Edition, Churchill Livingston ISBN: 978-0-4430703-5-8

Bickley, L. S.; Szilagyi, P. G.; 2003; ***Bates' Guide to Physical Examination and History Taking****;* (8th Ed); Lippincott; New York.

Epstein, O.; et al.; 1997; *Clinical Examination;* (2nd Ed.); Mosby; London. (similar to Bates but presents the information in a different but equally good way. Some very good photographs and is user friendly).

Marsh J; 1999 *History and Examination;* Mosby London. (a great 'crash course' book with sample questions. Very user friendly. I recommend it).

Forbes, C. D.; Jackson, W. F.; 1998; *Color Atlas and Test of Clinical Medicine;* (2nd Ed.); Mosby; London. Excellent reference book for photographs of various pathologies.

Haslett, C.; et al.; 1999; *Davidson's Principles and Practice of Medicine;* (18th Ed.); Churchill Livingstone; Edinburgh. (Use to put your clinical findings into context of general medicine).

Bradley J, Rubenstein D, Wayne D, The Clinical Manual, Blackwell Scientific publications. ISBN 0-632-03312-6. This is another very good pocket size book but you may have to order it. I find this book very useful because it also had a summary of the main pathologies and their signs and symptoms.