

Rheumatoid hand

examination

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RHEUMATOID HANDS EXAMINATION

✿Preparation of examination:-

- 1 - Stand on the Right side of bed.
- 2 - Introduce yourself.
- 3 - Permission taken.
- 4 - Good position for PT: - make the patient comfortable, and place the patient's hands on a pillow, palms down.
- 5 - Good exposure: - expose as much of the hands and forearms as possible(above elbow).

1-inspection: - start from distal to proximal

A)-Nails:-

- 1) Nail fold infarcts or sign of ischemia or necrosis 2nd to Raynaud's phenomenon.
- 2) Nail pitting:- small depressed point over nail surface.
- 3) Onycholysis:- separation of nail from nail bed.
- 4) Ridging:- longitudinal lines over nail surface.
- 5) Hyperkeratosis: - thickening of nail.
- 6) Splinter hemorrhage as in SLE case. **D/D** (trauma , infective endocarditis , SLE , vitamin C ↓)
- 7) Periungual erythema (dilated capillary loop)⇒SLE.

B)-skin: - Scar, erythema , rash , subcutaneous nodule

scar over joint ⇒ surgery (as tendon transplant , arthrodesis, corrective surgery, decompression as in carpal tunnel syndrome)

N.B :- Erythema over swelling joint not feature of rheumatoid arthritis but feature of septic arthritis.

N.B :- palmer erythema one of feature of R.A.

subcutaneous nodule if present indicate active phase.

☛)-muscles :- look for muscle wasting (atrophy) in both dorsum and palmer surface

muscle wasting indicate chronicity of disease .

D)-bone (joint) :- look for swelling, deformity.

1)-Swelling :- fluid :- its exudate occurs mainly in acute inflammation, in active phase of R.A (fluctuating test +ve)

Soft tissue over growth: - boggy swelling 2nd to chronic inflammation as in R.A .

Bone over growth: - hard swelling occurs in case of osteoarthritis e.g. ✿Bouchard's nodes [PIP]

✿Heberden's nodes [DIP]

2)-Deformity :- if present indicate chronicity of disease .

you have to look carefully for each joint and describe what you see as follow :-

deformity

joint

finger

hand

typical deformity occur in R.A are

- (1) Radial deviation at the wrist** with ulnar deviation of the digits, often with palmar subluxation of the proximal phalanges.
- (2) (Swan-neck deformity):-** Hyperextension of the proximal interphalangeal joints, with flexion of the distal interphalangeal joints.
- (3) (Boutonniere deformity) :-** Flexion contracture of the proximal interphalangeal joints and extension of the distal interphalangeal joints .
- (4) ("Z" deformity):-** Hyperextension of the interphalangeal joint and flexion of the first metacarpophalangeal joint of thumb.

2-palpation: - Ask if there is any pain

- a- Temp: -** by your dorsum aspect and compare each joint with proximal joint and joint beside.
- b- Tenderness :-** look to face of pt. if there is facial change.
- c- Swelling:-** palpate from proximal to distal either (hard, soft or fluid).
- d-subcutaneous nodules:-** palpate extensor aspect of forearm on ulnar side and olecranon process on elbow, other sites (sacrum, tendon Achilles, lung, pericardium, over valve...etc)

3-movement:- (active and passive)

Start with active by ask pt. to do following movement by himself :-

- **wrist** ⇒ **flexion , extension , abduction, adduction**
- **fingers** ⇒ **flexion , extension , abduction, adduction**
- **thumb** ⇒ **flexion , extension , abduction, adduction, opposition .**

N.B:- look carefully to all above movements for restriction , if present may due to :-

- 1- pain.**
- 2- sever muscle weakness.**
- 3- closed joint (arthrodesis.**

N.B:- if restriction of movement present go to next step which is (passive movement) to recognize the cause of restriction , if no restriction so go to assessment of power for each muscle.

- **passive movement:-** do it by your hand not by PT alone .
- **assessment of power :-** by move the joint against resistance.

N.B:- you have to know what the muscle responsible for each joint movement .

joints	Action and muscles and nerve supply .
wrist	Flexion⇒ Flexor carpi radialis and ulnaris (median nerve C7). Extension⇒ extensor carpi radialis and ulnaris (radial nerve C6,7).
Medial 4 fingers	Flexion ⇒ • DIP⇒ Flexor digitorum profundus (ulnar nerve C8, T1). • PIP⇒ Flexor digitorum superficialis (ulnar nerve C7,8,T1) . • MCP⇒ two medial lumbricalis (ulnar nerve)& two lateral lumbricalis (median nerve). Extension⇒ extensor digitorum, indicis & extensor digiti minimi(radial nerve C7) Abduction⇒ MCP⇒ dorsal interossei (ulnar nerve C8,T1). Adduction⇒ MCP⇒ palmar interossei (ulnar nerve C8,T1).
thumb	Flexion⇒ • MCP⇒ flexor pollicis brevis (ulnar and median nerve). • IPJ ⇒ flexor pollicis longus (median nerve). Extension⇒• MCP⇒ extensor pollicis brevis (radial nerve). • IPJ ⇒ extensor pollicis longus (radial nerve). Abduction⇒ abductor pollicis longus (radial nerve) brevis (median nerve). Adduction⇒ adductor pollicis (ulnar nerve). Opposition⇒ opponens pollicis (median nerve).

N.B:- all muscles in palmar aspect of hand are supplied by **ulnar nerve** except, (two lateral lumbricalis, abductor pollicis brevis, flexor pollicis longus & brevis, opponens pollicis) which supplied by **median nerve**.

All extensor muscles are supplied mainly by radial nerve .

•The following three muscles are considered part of the thenar eminence:-

1- Abductor pollicis brevis. 2- Flexor pollicis brevis. 3- Opponens pollicis.

4- Examination of median nerve:- (to recognize carpal tunnel syndrome)

A) Phalen test: - The patient is asked to hold their wrist in complete and forced flexion (pushing the dorsal surfaces of both hands together) for 30-60 seconds. **Positive test if** (burning, tingling or numb sensation over the thumb, index, middle and ring fingers) ⇒suggests carpal tunnel syndrome.

B) Tinel test: - is a way to detect irritated nerves. It is performed by lightly tapping (percussing) over the midpoint of flexor retinaculum of wrist joint, tinel sign is often **positive if** causing tingling in the thumb, index, and middle finger.

N.B:- Phalen maneuver is more sensitive than Tinel sign.

✱ **Causes of carpal tunnel syndrome: - (ARM PIT).**

- 1- Amyloidosis, Acromegaly.
- 2- Rheumatoid arthritis and other wrist arthritis.
- 3- Myxedema (hypothyroidism), multiple myeloma.
- 4- Pregnancy.
- 5- Idiopathic (most common) .
- 6- Trauma (fracture) , DM .

✱ **Function assessment of patient:-**

- Ask PT to Unbuttoning & buttoning or Writing the name.

✱ Tell examiner I would Like to:-

- 1- Examine other joint ⇒ b/c this may part of polyarthritis diseases.
- 2- Auscultate base of lung ⇒ late inspiratory crackles (fine crepitation) b/c RA associated with lung fibrosis.
- 3- Palpate abdomen ⇒ splenomegaly as part of felty syndrome, and may found hepatomegaly also.

✱ Dress & thanks for PT.

✱ **Important revision questions :-**

1- **How you can detect the chronicity and activity of the diseases in this PT?**

Chronicity: - can be detected clinically by (muscles wasting, joint deformity)

Activity: - can detected clinically by (rheumatoid nodule, swelling hot tender joint)

Also can detect activity by (↑ ESR & CRP).

2- **What precautions are necessary before upper gastrointestinal endoscopy or general anesthesia in patient with RA?**

It is necessary to take a cervical spine radiograph to rule out atlanto-axial Subluxation.

3- **What is means by rheumatoid factor?**

It is a circulating antibody (usually IgM) which reacts with antigenic Sites on the Fc portion of the patients IgG, Is present in 85% of pts, its presence correlates with severe disease (not activity or chronicity).

4- **Can you detect is PT sero positive (RF +ve) clinically?**

You can regard pt. as sero positive if he has rheumatoid nodule b/c RF is being +ve in 100% of PT has, R. Nodule.

5- **What do you know about rheumatoid nodule?**

- ✱ Local swelling or tissue lump sub-cutaneous.
- ✱ They are present in about 25% of cases.
- ✱ Site:- noted before , They are usually asymptomatic (painless).
- ✱ They are one of the criteria for diagnosis of RA.
- ✱ Their presence indicates:
 - 1-Active disease. 2-RF is being +ve in 100%.
 - 3-More aggressive disease with extra-articular manifestations.

6-What investigation you like to do for this pt?

a-Rheumatoid factor:

b-Other laboratories:-

CBC:-

- ◆ RBC ⇒ normocytic normochromic anemia .
- ◆ WBC ⇒ Leukocytosis or neutropenia (Felty's syndrome) .
- ◆ Platelets ⇒ Thrombocytosis or thrombocytopenia (Felty's syndrome) .
- ◆ ESR & CRP:- both are elevated.
- ◆ RFT :- U/E/C ⇒ to determine the complication on kidney .

c-Synovial fluid analysis ⇒ useful to rule out crystalline disease, infection.

d-Radiographs ⇒ x-ray (joint) changes include: -

✱ **Early x-ray findings**

- Narrowing of joint space ⇒ Periarticular osteopenia. ⇒ Soft-tissue swelling .

✱ **Lateral x-ray findings**

- Marginal erosions ⇒ Subluxation.

✱ **CXR should be obtained** ⇒ if there is lung fibrosis, or nodules.

7-how you can monitor this PT disease?

Monitoring by:-

- **Hx:** Morning stiffness.
- **Ex:** Joint tenderness.
- **Ix:** ESR, CRP & hemoglobin levels are used to monitor response to treatment.

8-What are criteria help diagnosis & what are poor prognostic criteria ?

✱ Criteria for diagnosis (3R, 3A, 2T)	✱ Poor prognosis criteria
Rheumatoid nodule present.	Gradual onset (insidious onset)
Rheumatoid factor +ve.	Female gender
Radiological finding.	Present with involvement of MCP.
Arthritis > 3 joint involvement	+ve rheumatoid factor.
Arthritis of small peripheral joint (hands, feet)	Large number of swelling joints.
Arthritis symmetrical in distribution.	HLA DR3, DR4.
Time of morning stiffness > 60 min.	↑ ESR, ↑ CRP & renal impairment.
Time of disease (duration of symptoms) > 6 weeks.	Presents with history of disease duration > 3 months.
	Extra articular manifestation & sub cutaneous nodule.
	X - ray erosions in early stage of disease < 2 years .

9- What are common joints involvement in RA ?

it characteristically involves hand joint (PIP, MCP, wrist) and feet joints (MTP) and knees.

10- What are extra articular manifestations of (complications) RA?

skin	rheumatoid nodules, Vasculitis, palmar erythema, Raynaud's syndrome & pyoderma gangrenosum
eyes	common ⇒ with 25% of patients having eye problems (keratoconjunctivitis sicca) is the most common, episcleritis, scleritis, and scleromalacia perforans. (iritis not feature) drugs complication ⇒ steroid-induced cataract, chloroquine retinopathy.
CVS	Pericarditis most common, myocarditis (arrhythmias), endocarditis, coronary ischemia, aortic lesion.
respiratory	Pleural effusion (most common pulmonary complication > male) nodules, interstitial disease, Caplan's syndrome [sero (+ve) RA associated with pneumoconiosis].
Blood	Anemia, Felty's syndrome (splenomegaly and neutropenia), ↑ risk of lymphoma.
nerves	• Peripheral neuropathy ⇒ glove-and-stockings sensory loss. • Mononeuritis multiplex ⇒ 2ry to Vasculitis in vasa nervosa. • Entrapment neuropathy, e.g. carpal tunnel syndrome. • cervical myelopathy ⇒ may 2ry to atlanto-axial subluxation
Kidney	• 2ry Amyloidosis ⇒ from disease or therapy. • proteinuria (Nephrotic) ⇒ due to Drug therapy (gold salts, penicillamine) or Amyloidosis.

11-How anemia can be occur in RA ?

- ❖ Anaemia of chronic disease.
- ❖ Hemolytic anemia ⇒ (autoimmune association).
- ❖ Megaloblastic anaemia due to folate deficiency or associated pernicious anaemia (Felty's syndrome)
- ❖ Drugs :- (NSAIDs) causing iron deficiency anaemia
- ❖ Bone marrow suppression caused by gold or erythropoietin ↓ (amyloidosis kidney) .

12- What are triggered factor in RA ?

- 1- Autoimmune disease.
- 2- First relative degree .
- 3- female especially postpartum or breast feeding.
- 4- cigarette smoking.
- 5- stop of therapy suddenly .

13-How you can treat this PT?

A)- Medical by:-

1. Non pharmacological:- Physical and occupational therapy , psychological therapy, education about natural of disease , encourage for mild exercise in non-active phase & rest in active phase.

2. Pharmacological :-

- Aspirin or NSAIDs. Intra-articular glucocorticoids.
- Systemic glucocorticoids.

These drugs (NSAID and glucocorticoids) control of pain and inflammation, **but drugs don't alter disease progression**, Long term use of NSAID can cause **peptic ulcer**.

• **Disease-modifying antirheumatic drugs (DMARDs):-**

N.B:- best started early in the course of disease (ideally within 3 months).can alter disease progression, such as the development of erosions. **All of them take weeks to months to start working.**

- ✱ **Methotrexate:** is first-line drug, given as weekly low-dose oral or parenterally administered.
- ✱ **Sulfasalazine:** is the other first line drug. **S/E:-** GI upset, depression, and reversible oligospermia.
- ✱ **Hydroxychloroquine:** side effect is macular damage.
- ✱ **Gold therapy** (either by IM or orally) takes 2-3 months to start acting. Side effect:- Include rashes, thrombocytopenia, leukopenia, aplastic anemia and glomerulonephritis (Nephrotic syndrome).
- ✱ **D-penicillamine** can cause Nephrotic syndrome.
- ✱ **Anti-cytokine therapy & TNF modulatory agents:**
 - **Etanercept:-** s/c administration, can cause demyelination .
 - **Infliximab:** IV administration, risks include reactivation of TB.

b)-Surgery:- may be considered for severe functional impairment due to deformity.

14-What is palindromic rheumatoid arthritis?

Palindromic onset is seen in some patients with recurrent episodes of joint stiffness and pain in individual joints lasting only a few hours or days. Hydroxychloroquine may be of value in preventing recurrences.

15-What is Sjogren's syndrome?

- The association of keratoconjunctivitis sicca (lack of lacrimal secretion) and xerostomia (dry mouth due to lack of salivary gland secretion) in association with a connective tissue disorder, usually rheumatoid arthritis. This syndrome may be associated with autoimmune thyroid disease, myasthenia gravis or autoimmune liver disease.

Raynaud's phenomenon:- (1^{ry} & 2nd)

1-Primary Raynaud's (disease)

Raynaud's disease, or "Primary Raynaud's", is diagnosed if the symptoms are idiopathic, that is, they occur by themselves and not in association with other diseases.

Risk factors :- (hereditary, heavy Smoking , Caffeine)

Association: - migraine, angina.

2-Secondary Raynaud's (syndrome)

Raynaud's syndrome or (Secondary Raynaud's) occurs secondary to a wide variety of other conditions:-

✱ **Connective tissue disorders:**

(Scleroderma, systemic lupus erythematosus, rheumatoid arthritis, Sjögren's syndrome dermatomyositis, polymyositis)

✱ **Obstructive disorders (vascular)**

(Atherosclerosis, Buerger's disease, Takayasu's arteritis, subclavian aneurysms, thoracic outlet syndrome)

✱ **Drugs:-**

(Beta-blockers , cytotoxic drugs (bleomycin) , ciclosporin , ergotamine , sulfasalazine)

✱ **Occupation**

(Jobs involving vibration, exposure to vinyl chloride, mercury, exposure to the cold)

✱ **Eating disorders** ⇒ anorexia nervosa

✱ **Others:-**

(Hypothyroidism, malignancy, carpal tunnel syndrome, Magnesium Deficiency)

✱ **Polyarthritis:-**

Polyarthritis is any type of arthritis which involves five or more joints ,an inflammation of two, three or four joints is an oligoarthritis

Causes of polyarticular arthritis

✱ Rheumatoid arthritis , Juvenile rheumatoid arthritis , Rheumatic fever , Ankylosing spondylitis

✱ Collagen-vascular diseases :-

SLE , Scleroderma , Polymyositis, dermatomyositis , Sjogren's disease , reiters disease , Psoriasis

Inflammatory bowel disease , Amyloid , sarcoid

✱ Hematologic disorders :-

Leukemia , Lymphoma , Multiple myeloma , Hemophilia , Hemoglobinopathies , Hemochromatosis

✱ Metabolic disorders:- Wilsons disease , Acromegaly , Hypothyroidism

✱ Others:- Renal transplant, Gout, Pseudogout

Causes of monoarticular arthritis

1. Juvenile rheumatoid arthritis, Ankylosing spondylitis, Psoriasis.

2. Inflammatory bowel disease.

3. Leukemia, Lymphoma, Bleeding disorders.

4. Acromegaly, Amyloidosis.

5. Degenerative joint disease (O.A).

6. Infection:- S.aureus , S.pneumonia .

7. Gout , Pseudogout

Causes of +ve rheumatoid factor

- 1)** Aging , Rheumatoid arthritis , SLE , Progressive systemic sclerosis , Dermatomyositis, polymyositis, Sjogren's syndrome , Chronic active hepatitis , Lymphoma •
- 2)** Infections⇒ Syphilis , TB , SBE , Infectious mononucleosis , Viral hepatitis , Influenza , AIDS Cytomegalovirus , Rubella•
- 3)** Chronic lung disease⇒ Pneumoconiosis, Sarcoidosis, Idiopathic interstitial fibrosis•
- 4)** Others:- Multiple transfusions , Renal transplantation•

Conditions linked to human leucocyte antigen HLA B27 type

- a.** Ankylosing spondylitis
- b.** Reactive arthritis
- c.** Psoriatic arthritis (some forms)
- d.** Enteropathic arthritis - associated with ulcerative colitis and Crohn's disease

Abnormality	Appearance and consistency	Typical site	Associated disease
Heberden's nodes	Small bony nodules	DIP joints	Osteoarthritis
Bouchard's nodes	Small bony nodules	PIP joints	Osteoarthritis
Rheumatoid nodules	Fleshy and firm	Extensor surface of knuckles	Rheumatoid arthritis
Tophi	White subcutaneous	Juxta-articular	Gout
Calcific deposits	White subcutaneous	Finger pulp	Systemic sclerosis, dermatomyositis
Dilated capillaries	(Use magnifying glass)	Nail folds	Systemic sclerosis, dermatomyositis, SLE

