

Examining the Fingernails

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PreTest 1

- What disease would most likely produce these nails?
 - Diabetes mellitus
 - Congestive heart failure
 - Hypothyroidism
 - Liver disease
 - Renal disease
 - SLE



PreTest 2

- What disease would most likely produce these nails?
 - Diabetes mellitus
 - Congestive heart failure
 - Hypothyroidism
 - Liver disease
 - Renal disease
 - SLE



PreTest 3

- What disease would most likely produce these nails?
 - Diabetes mellitus
 - Congestive heart failure
 - Hypothyroidism
 - Liver disease
 - Renal disease
 - SLE



What information is available from examining the fingernails?

- Overall vitality
- Inner emotional state
- Cerebral dominance
- Occupations and hobbies
- Past medical history
- Nutritional status
- Cardiovascular function
- Rheumatic conditions
- Dermatological problems

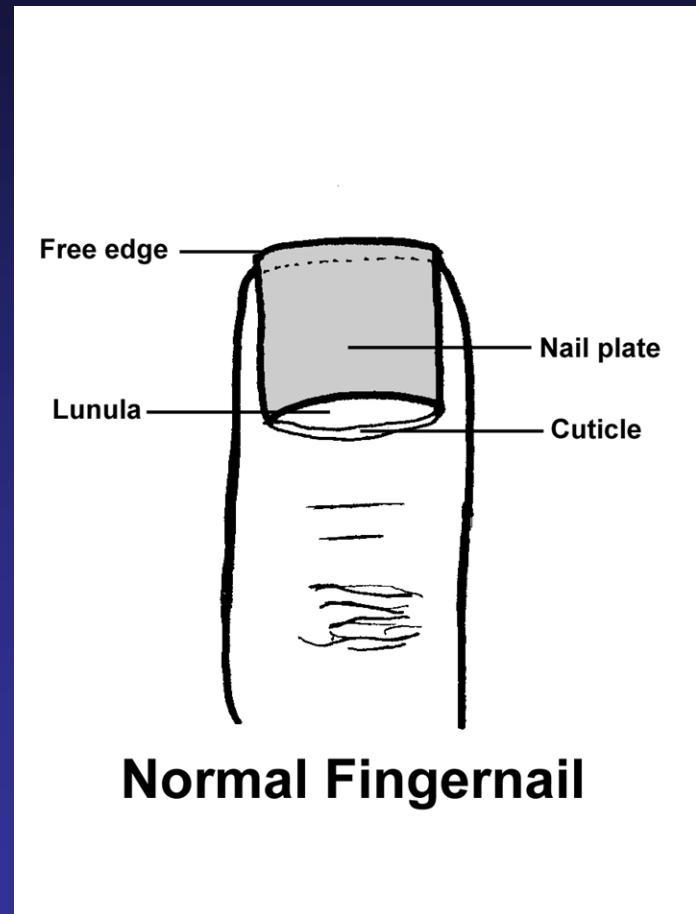
Sequence of the Examination

- Check the nail shape
- Examine the nail color
- Survey processes around the nails
- Compare hands
- Note skin conditions

Observing the Nail Shape

Normal Nail Findings

- Softness and flexibility of free edge
- Shape and color
- Quality of paronychia tissue
- Growth rate
 - Six months from cuticle to free edge
 - Time of events can be estimated from location
- Nail polish
 - Distance from base and line of polish gives approximate date of application (nails grow 0.1mm/ day)
 - Toenail polish suggests unusual flexibility, a friendly helper, or pedicure



Clubbed fingernails

- Causes of clubbing (not exhaustive)
 - Pulmonary and Cardiovascular causes (80%)
 - Lung cancer, pulmonic abscess, interstitial pulmonary fibrosis, sarcoidosis, beryllium poisoning, pulmonary arteriovenous fistula, subacute bacterial endocarditis, infected arterial grafts, aortic aneurysm
 - Gastrointestinal causes (about 5%)
 - Inflammatory bowel disease, sprue, neoplasms (esophagus, liver, bowel)
 - Hyperthyroidism (about 1%)
 - Note: Chronic Obstructive Pulmonary Disease does not cause clubbing!



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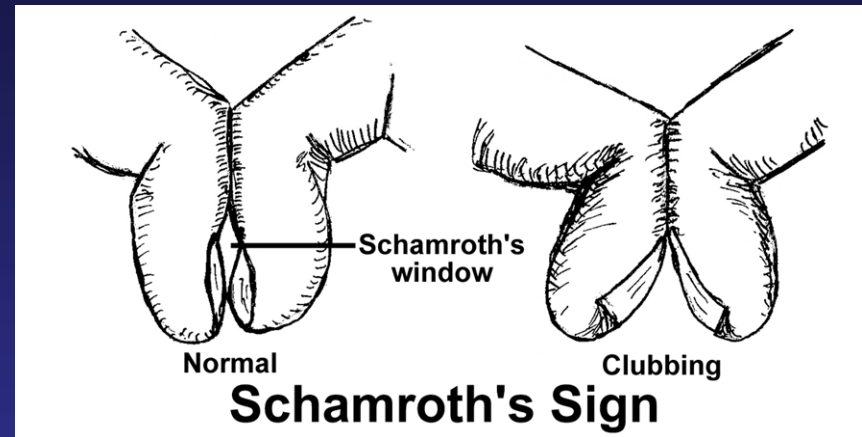
Schamroth's sign

Purpose

- to determine if nails are clubbed

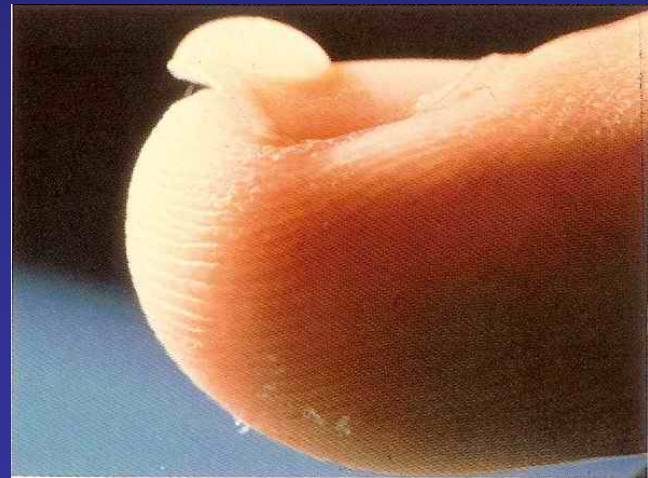
Method

-have patient place both forefinger nails together and look between them. If you can see a small diamond space between them (Schamroth's window) then the nails are not clubbed



Spooned nails (Koilonychia)

- Water drop test
 - Imagine placing a drop of water on the nail with a medicine dropper. If a drop of water would not roll off the nail, it is spooned
- Causes
 - iron deficiency
 - diabetes mellitus
 - Protein deficiency especially in sulfur-containing amino acids (cysteine or methionine)



Koilonychia comes from the Greek words for “spoon” and “nail”.

Beau's Lines

- Caused by growth arrest
- Sign of significant illness
- Temporal relationships (location of the line tells when the illness was experienced)



The location half way up the nail
Suggests illness 3 months ago



Note the 2 Beau's lines
About 2 months apart

Thin Brittle Nails

- Metabolic bone disease
 - Nail thinness is correlated with osteopenia
- Thyroid disorder
- Systemic amyloidosis
 - Yellow waxy flaking
- Severe malnutrition



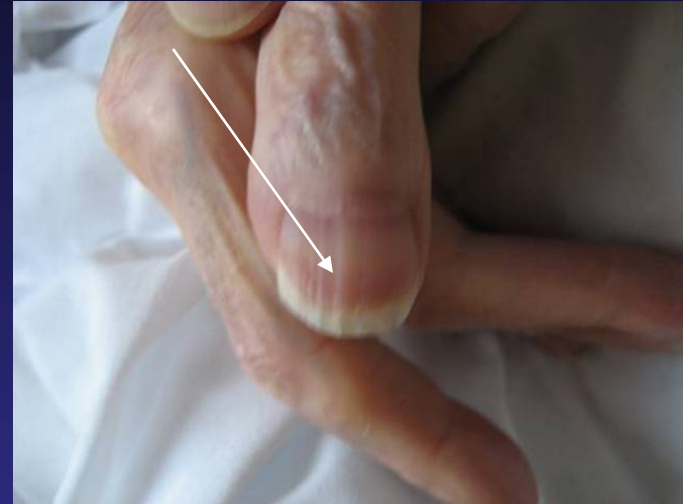
Note the thin nails in this woman with severe osteopenia



Systemic Amyloidosis

Central Nail Ridge

- Causes
 - Iron deficiency
 - Folic acid deficiency
 - Protein deficiency



Central Nail Canal (Median Nail Dystrophy)

- “Heller’s fir tree deformity”
- Cuticle is usually normal
- Associations
 - Severe arterial disease
 - Severe malnutrition
 - Repetitive trauma



Nail Pitting

- Cause is nail matrix inflammation
- Conditions
 - Psoriasis (random appearance of pits)
 - Alopecia areata (geometric rippled grid)
 - Eczema
 - Lichen planus



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Nail Beading

- Beads seem to drip down the nail like wax
- Associated with endocrine conditions
 - Diabetes mellitus
 - Thyroid disorders
 - Addison's disease



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Rough Nail Surface

- Nails look sandpapered and dull
- Consider:
 - autoimmune disease
 - Psoriasis
 - Chemical exposure
 - Lichen planus



Nail Thickening

- Slow nail growth produces the thickness
- Consider:
 - Onychomycosis
 - Chronic eczema
 - Peripheral vascular disease
 - Yellow nail syndrome
 - Psoriasis



Separation of the Nail Plate (Onycholysis)

- Caused by lifting of the nail plate
- Associations
 - Thyrotoxicosis
 - Psoriasis
 - Trauma
 - Contact dermatitis
 - Toxic exposures (solvents)
 - Porphyria cutanea tarda (onycholysis and blistering of sun exposed skin)



Traumatic onycholysis
(Only involving one nail)



Psoriasis
Note the jagged border

Severe Curvature

- Curved or beaked nails
 - Caused by resorption of distal digit
 - Consider
 - Hyperparathyroidism
 - Renal failure
 - Psoriasis
 - Systemic sclerosis



Complete Nail Destruction

Local mechanisms:

- Trauma
- Paronychia

Generalized conditions:

- Toxic epidermal necrolysis
- Chemotherapy
- Bullous diseases
- Vasculitis

Observing Nail Color

Abnormalities of the Lunula

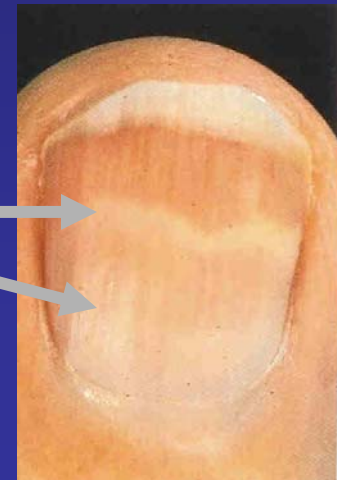
- Absent
 - Anemia
 - Malnutrition
- Pyramidal
 - Excessive manicure
 - Trauma
- Red Discoloration
 - Cardiovascular disease
 - Collagen vascular disease
 - Hematological malignancy
 - Others



Focal Discolorations of the Nail Plate

Transverse White Lines

- Mee's lines
 - Can time the event from location on nail
 - Significant illness
 - Heavy metal toxicity
 - Chemotherapy
- Muehrcke's lines
 - Parallel white irregular lines
 - Caused by edema to nail plate
 - Sign of hypoalbuminemia
 - Lines do not migrate and disappear when albumin increases



White Splotches

- Leukonychia striatae
- Caused by minor trauma to the nail matrix
- Timing can be determined by the location on the nail



Longitudinal Brown Lines

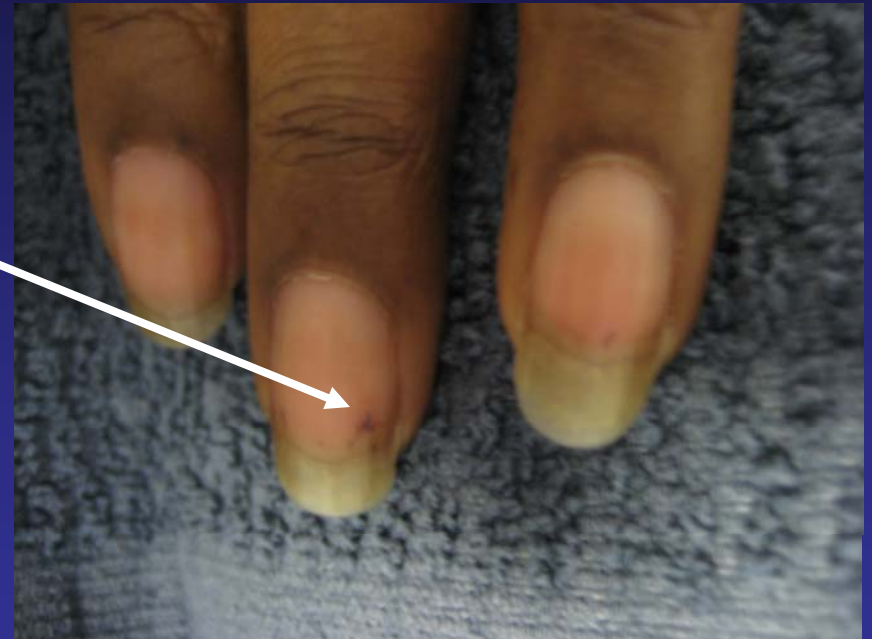
- Mechanism
 - Increased melanin production by nail matrix melanocytes
- Associations
 - Addison's disease
 - Nevus at nail base
 - Breast cancer
 - Melanoma (check for periungual pigmentation)
 - Trauma



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Splinter Hemorrhages

- Caused by hemorrhage of distal capillary loops
- Note thickness
- Associations
 - SBE
 - SLE
 - Trichinosis
 - Pityriasis rubra pilaris
 - Psoriasis
 - Renal failure



Splinter hemorrhages tend to be fat.

Terry's Half and Half Nails

- Proximal portion is white (edema and anemia) and the distal portion is dark
- These nails imply either renal or liver disease
- In renal disease there is a brown band at the junction of the erythema and the free edge



Liver disease (no brown line)



Renal disease (brown line)

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Generalized Discolorations of the Nail Plate

White Nails

- Caused by anemia, edema or vascular conditions
- Consider:
 - Anemia
 - Renal failure
 - Cirrhosis
 - Diabetes mellitus
 - Chemotherapy
 - Hereditary (rare)



Pink or Red Nails

- Consider:
 - Polycythemia (dark)
 - SLE
 - Carbon monoxide (cherry red)
 - Angioma
 - Malnutrition



Brown Grey Nails

- Consider:
 - Cardiovascular disease
 - Diabetes mellitus
 - Vitamin B12 deficiency
 - Breast cancer
 - Malignant melanoma
 - Lichen planus
 - Syphilis
 - Topical agents



Yellow Nails

- Consider:
 - Amyloidosis
 - Lymphedema and bronchiectasis (yellow nail syndrome)
 - Median/Ulnar nerve injury
 - Thermal injury
 - Jaundice
 - Diabetes mellitus



Green or Black Nails

- Topical preparations
- Chronic *Pseudomonas* infection
- Trauma



Processes Around the Nail

Processes Around the Nail

- Chronic paronychia inflammation
 - Swelling
 - Scaling
 - Nail separation



Periungal telangeiectasia

- Dilated capillary loops and atrophy of cuticle
- Strongly associated with collagen vascular disease
 - SLE
 - Dermatomyositis
 - Scleroderma



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Swelling Around the Nail

- Mucus cyst
- Fibroma
- Malignant melanoma



Masses

- Pyogenic granuloma



- Warts



- Fibroma



- Malignant melanoma



PreTest 1

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PreTest 1

Diabetes Mellitus

- What disease would most likely produce these nails?
 - Diabetes mellitus
 - Yellow nails and longitudinal ridging



PreTest 2

- What disease would most likely produce these nails?
 - Diabetes mellitus
 - Congestive heart failure
 - Hypothyroidism
 - Liver disease
 - Renal disease
 - SLE



PreTest 2

Liver Disease

- What disease would most likely produce these nails?
 - Terry's half and half nails suggest
 - Liver disease or
 - Renal disease
 - No convincing brown line at the junction of the erythema and free edge suggests liver disease



PreTest 3

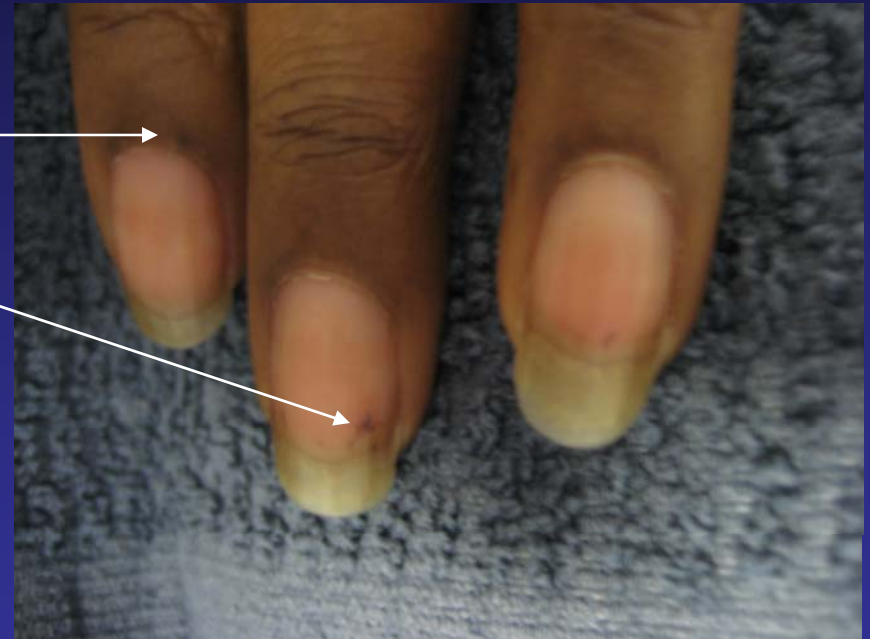
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 - SLE



PreTest 3

SLE

- What disease would most likely produce these nails?
 - SLE
 - Note the fat splinter hemorrhage and the periungual telangiectasia



Summary

- Considerable useful information is available from careful examination of the nails
- Starting with the nail examination immediately communicates a sense of diligence and thoroughness
- Remain attentive and continually add to your diagnostic repertoire

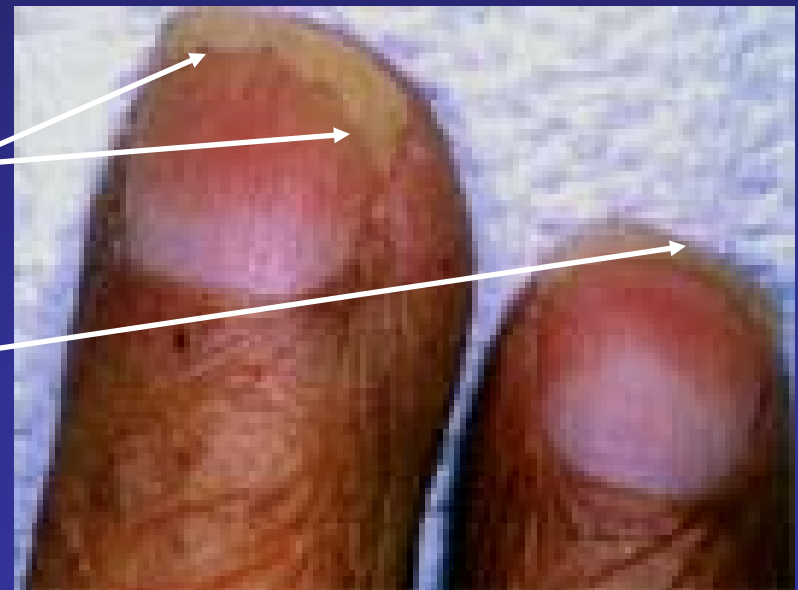
Post Test 1

- 71 year old man with lethargy, fatigue, and anorexia
- What is your diagnosis and the evidence that supports it?



Renal Failure with hyperparathyroidism

- Terry's half and half nails imply liver or renal disease
- Brown distal coloration suggests renal disease
- Nail curvature implies resorption of distal phalange from PTH



Post Test 2

- 66 year man with fatigue, hypotension and an increased sense of smell



Addison's disease

- Note longitudinal dark brown line and beading
- No cuticular nevus or mass to suggest melanoma



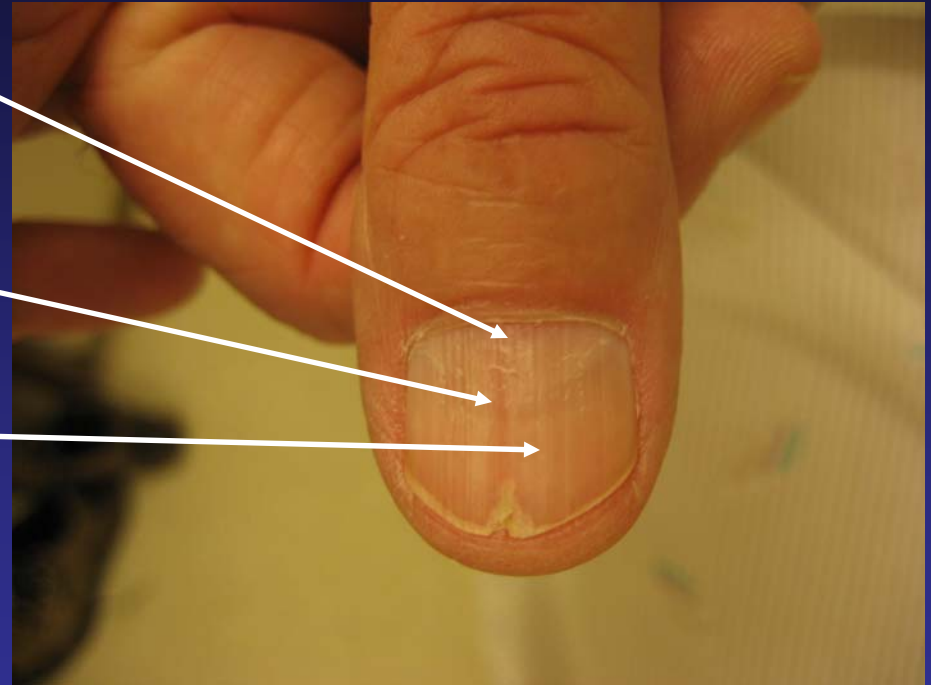
Post Test 3

- 78 year old with diabetes mellitus, anemia, congestive heart failure and peripheral vascular insufficiency
- What is the evidence?



Post Test 3

- Red lunula can imply CHF
- Heller's line suggests peripheral vascular disease
- Ridging suggests diabetes or another endocrine condition
- Overall pallor suggests anemia



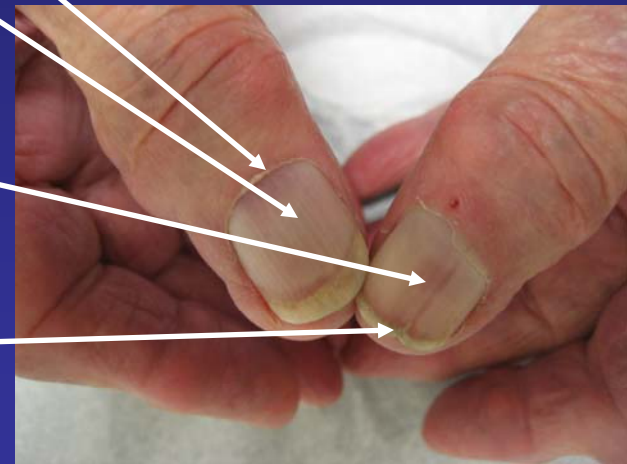
Post Test 4

- 84 year old man with a painful ankle. Name 5 likely diseases on his problem list



Post Test 4

- Gout (tophi) —————→
- CHF (red lunula) —————→
- Anemia (pallor) —————→
- Peripheral arterial disease (longitudinal red line) —————→
- Chronic kidney disease (distal brown pigmentation) —————→



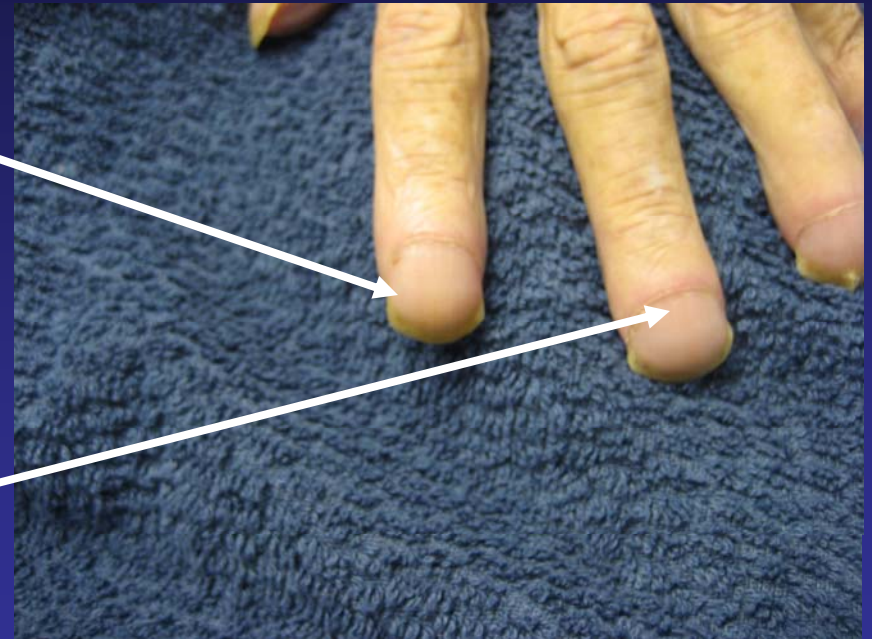
Post Test 5

- 68 year old man with weight loss and dysphagia



Esophageal Cancer

- Extreme nail beaking implies resorption of distal digit
- In this case due to PTH like hormone produced by the malignancy
- Loss of lunula implies malnutrition or anemia



Post Test 6

- 62 year old woman with proximal muscle weakness, dysphagia and weight loss



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Dermatomyositis

- Cuticular atrophy and periungal telangiectasias suggest collagen vascular disease
- Gottron's papules over the knuckles imply dermatomyositis



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Systemic lupus affecting the skin over the hands
tends to spare the knuckles while
Dermatomyositis tends to involve the knuckles

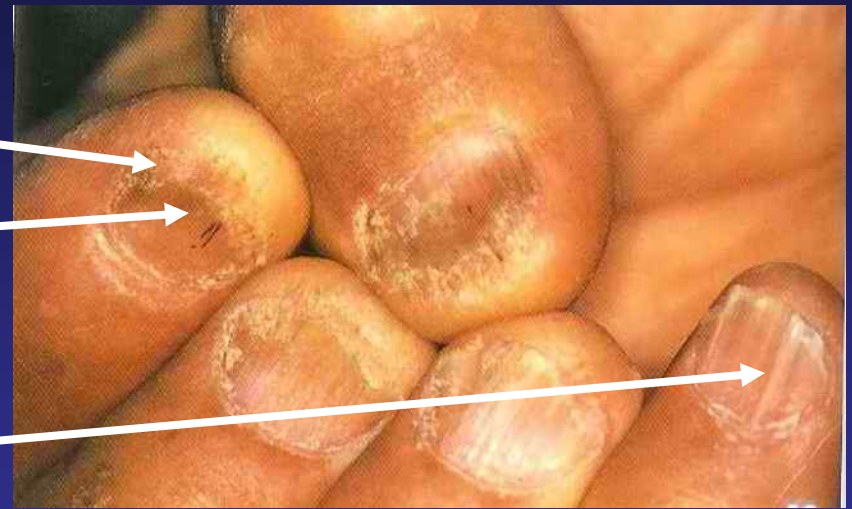
Case 7

- 78 year old man with first degree heart block, periorbital purpura, and an enlarged liver



Case 7 Systemic Amyloidosis

- Thinned, ragged edges
- Yellow discoloration
- Ridging



Case 8

- 70 year old man with depression, fatigue, weight loss and irritability
- No history of trauma
- No evidence of Psoriasis on exam



Case 8

Thyrotoxicosis

- Nails show significant onycholysis
- Pallor and loss of lunula suggests malnutrition



Case 9

- 60 year old with painful fingers



Case 9

Psoriasis

- Onycholysis
- Splitting of nail plate
- Salmon patch
- Chronic paronychia
- Nail disease is associated with psoriatic arthritis



Case 10

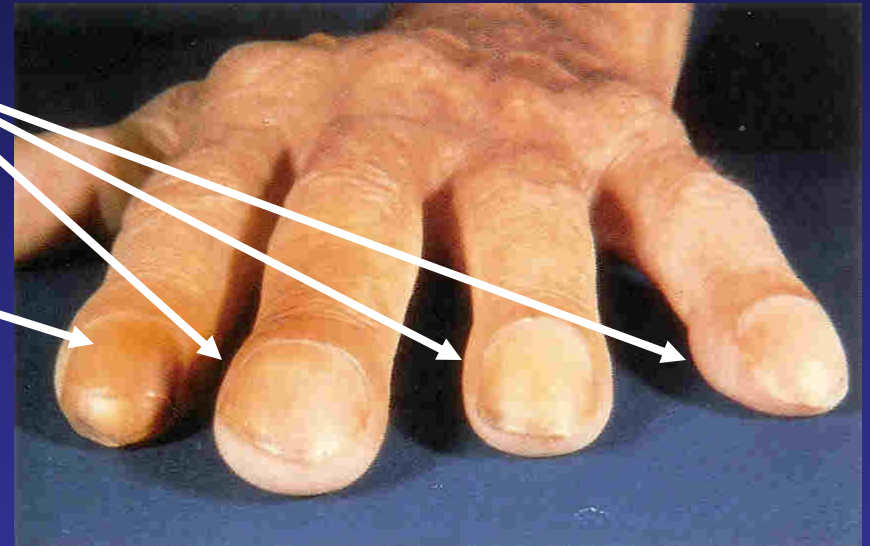
- 75 year old man with weight loss and shortness of breath



Case 10

Lung cancer

- Significant clubbing
- Nicotine staining from cigarette smoking



Case 11

- Ill appearing 60 year old man with fever, malaise, weight loss and painful testicles



Case 11 Polyarteritis Nodosa

- Splitting
- Thinning
- Ridging
- Nail plate infarction
- Periungual telangiectasia



Case 12

- 55 year old woman with fatigue, muscle pain and pleuritic chest pain



Case 12

Systemic Lupus

- Periungual telangiectasis and cuticular atrophy suggest collagen vascular disease
- Rash tends to spare the knuckle



Case 13

- 55 year old man with hyperpigmentation of his face, increased facial hair and dark urine



Case 13

Porphyria Cutanea Tarda

- Onycholysis and blistering
- Due to defective liver uroporphyrinogen decarboxylase
- Urine has coral pink fluorescence under a Wood's lamp



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