Soft tissue lesions

Diagnosis and treatment of various cutaneous and subcutaneous pathologies
Cutaneous lesions

• Hyperkeratotic lesions
  - verruca plantaris
  - porokeratosis
  - intractable plantar keratoma
  - heloma miliare
  - heloma neurofibrosum

• Bulla

• Skin abscess

• Nevus appearing lesions

• Onychocryptosis, paronychia
Subcutaneous lesions

• Solid lesions
  - Morton’s neuroma
  - plantar fibromatosis
  - tendon sheath fibroma
  - fibrosarcoma
  - lipoma
• Cystic lesions
  - sebaceous cyst
  - ganglionic cyst
  - mucoid cyst
  - inclusion cyst
• Bursitis
Cutaneous lesions

Hyperkeratotic lesions

- Verruca plantaris
- Variants include deep palmoplantar warts, superficial palmoplantar mosaic warts, planar warts
Etiology of Verruca Plantaris

- Human DNA papilloma virus
- Encapsulated virus which replicates rapidly, making it very difficult to treat
- Over 150 strains, of which 20 or so are concerned with Dermatology/Podiatry
- Human HPV types 1,2,4,10 causing palm/plantar warts

Treatment of Verruca Plantaris

- Chemocautery alternatives
- Cryotherapy
- Surgical treatment
- Mechanical debridement
- Occlusion
Curettage of lesion
Laser vaporization of margin and base
Curettage of vaporization residue
De-focused laser treatment of base of lesion and margins, note intact superficial fascia
Cutaneous lesions

Heloma miliare
- hyperkeratotic papules with nucleation
- usually on sole
- often multiple
- average 2-4 mm diameter
- no capillary involvement
- the condition may be inherited
- Treatment palliation, chemocautery
Cutaneous lesions

Hyperkeratotic lesions

- Intractable plantar keratoma
- Structural/biomechanical etiology
- Treatment with palliative care, chemocautery or curettage
- Accomodative orthotics
Cutaneous lesions

Heloma neurofibrosum
- Multiple small painful keratinous plugs
- The lesion may represent an old “burnt out wart” maintained by mechanical forces

- from Witkowski JA, Lemont H, Cutaneous Disorders of the Lower Extremities, 1993
- Treatment chemocautery, currettage, laser
Cutaneous lesions

Porokeratosis plantaris discreta

- Blocked eccrine gland cyst, Small, round, translucent keratinous plug,
Cutaneous lesions

Porokeratosis plantaris discreta
Cutaneous lesions

**Bulla**

- Blister with or without infection
- Traumatic etiology
- Treatment puncture aspiration, cultures, antibiotics if clinically indicated
- Best if roof is left intact if possible
- Local care
Cutaneous lesions

Bulla
Cutaneous lesions

Skin abscess

• At risk, diabetics, immunocompromised, peripheral vascular disease
• Implies infectious process, usually staphylococcus species
• Often traumatic etiology disrupting skin integrity
• May accompany cellulitis
• Radiographs, MRI pending depth of lesion
• Treatment I&D, cultures, antibiotics, local care
Cutaneous lesions

Abscess secondary to breakdown of hyperkeratotic lesion at IP joint with subsequent localized cellulitis and severe onycholysis
Cutaneous lesions

Nevus appearing lesions

- Squamous cell carcinoma
- Basal cell carcinoma
- Seborrheic keratosis
- Epitheloma
- Dermatofibroma
- Congenital benign melanocytic nevi
  - junctional, compound, intradermal
- Benign juvenile melanoma
- Dysplastic nevus
- Malignant melanoma
Cutaneous lesions

Nevus appearing lesions

Squamous cell carcinoma

- Malignant neoplasm
- In situ (superficial – Bowen’s disease) or locally invasive (infiltrating)
- Discrete hard, brown verrucoid appearing papule
- Subungual location mistaken for pyogenic granuloma
- Fair skinned individuals of advanced age, sun exposure
- Variants include actinic keratosis, epitheloma, keratoacanthoma
- Excision with biopsy
Cutaneous lesions

Nevus appearing lesions

Squamous cell carcinoma

- Lemont H, A Closer Look at Wart Treatment, Podiatry Today supplement, May 2004
Cutaneous lesions

Nevus appearing lesions

Basal cell carcinoma
- Second most common malignancy of the skin, actinic keratosis first
- Fair skinned adult males most prevalent
- Variants nodular, infiltrative, pigmented, sclerosing
- Excision with biopsy

Hall, J., Sauer’s Manual of Skin Diseases, 2006, p. 282
Cutaneous lesions

**Nevus appearing lesions**

- Tan, brown waxy appearing scales
- Single or multiple, on dorsal surfaces
- Increased propensity at middle aged and beyond
- Closely resembles verruca, stucco keratosis
- If inflamed, may resemble squamous or basal cell carcinoma

**Seborrheic keratosis**
Cutaneous lesions

Nevus appearing lesions

Epitheloma

- Biopsy to confirm diagnosis
- Surgical removal could require graft depending upon size and location
- 5% FU?
Epithelioma cuniculatum

- Low grade squamous cell carcinoma resembling a chronic wart both clinically and histologically
- A history of previously unsuccessful wart treatment is often elicited,
- Biopsy indicated, R/O melanoma

-from Witkowski JA, Lemont H, Cutaneous Disorders of the Lower Extremities, 1993
Cutaneous lesions

Nevus appearing lesions

- Benign dermal based tumor
- Small, firm papule or nodule
- Predilection to hands, lower extremities, including nail unit
- A change in appearance necessitates excision
- Subtypes include cellular, aneurysmal, clear, fibrocollagenous, histiocytic

Dermatofibroma
Cutaneous lesions

Nevus appearing lesions

- Congenital, melanocytic nevus, well circumscribed, dark, slightly elevated
- Benign cellular hyperplasia
- Proliferation of nests of melanocytes at the dermal/epidermal junction
- Appear in childhood, adolescence

Junctional nevus

Hall, J., Sauer’s Manual of Skin Diseases, 2006, p. 290
Cutaneous lesions

Nevus appearing lesions

- Congenital melanocytic nevus
- Benign hyperplasia
- Majority of nevi in middle aged adults
- Light tan to brown in color
- Primarily dermal in penetration

Intradermal nevus
Cutaneous lesions

Benign juvenile melanoma

-from Witkowski JA, Lemont H, Cutaneous Disorders of the Lower Extremities, 1993

- Malignant melanoma of the foot is the most common misdiagnosis of verruca plantaris

-Lemont H, A Closer Look at Wart Treatment, Podiatry Today Supplement, May 2004
# Cutaneous lesions

**Nevus appearing lesions**

- Histopathic atypia, melanoma precursor
- Exhibits gross features overlapping malignant melanoma
- Similar in appearance to junctional nevus
- Greater than 6 mm in diameter with irregular, indistinct borders

**Dysplastic nevus**
Cutaneous lesions

Nevus appearing lesions

- Invasion of neoplastic melanocytes through the epidermal/dermal junction, gaining systemic access
- Malignant, metastatic
- Depth of penetration to dermis and beyond most reliable prognostic indicator
- Poor prognosis if delayed diagnosis and treatment
- If associated with skin ulceration, dire prognosis

Malignant melanoma

Hall, J., Sauer’s Manual of Skin Diseases, 2006, p. 305
Cutaneous lesions

- Lentigo maligna melanoma
  - primarily those of advanced age
- Acral lentiginous melanoma
  - hands, feet, subungual locations
  - amelanotic variant
- Spindle cell melanoma
  - often non pigmented
  - perineural invasive propensity
- Nodular melanoma
  - non pigmented variant, otherwise typically dark brown or black
- Superficial spreading
  - deep penetration through epidermis and dermis

Verrucoid miscellaneous forms also exist
Cutaneous lesions

Nevus appearing lesions

Malignant melanoma

• Clinical staging utilized for prognosis and establishing treatment plan
• Four stages/substages in the current classification system
• Criteria based on
  - presence or absence of ulceration
  - extent of lymph node involvement/metastatic advancement
  - Breslow’s depth for determining tumor thickness, Clark’s level of penetration
Cutaneous lesions

Nevus appearing lesions

Malignant melanoma

- Early biopsy critical to determine diagnosis and staging
- Indications for biopsy include lesion asymmetry, pigment variation, skin breakdown, change in appearance
- Plantar location elevates suspicion
- Shave biopsy for smaller, non ulcerated lesions
- Punch biopsy for larger, ulcerated lesions
- Excision parameters determined by lesion diameter and depth
- Current acceptable clean margins, for in situ melanoma 0.5 cm margins, 1 cm margins for tumor thickness of < 2.0 mm, 2 cm margins for tumor thickness of > 2 mm
- Currently excision to fascia is favored over amputation
Cutaneous lesions

Onychocryptosis
Cutaneous lesions

Onychocryptosis presentations

- Acute without granuloma
- Acute with pyogenic granuloma
- Chronic with fibrosing pyogenic granuloma
- Paronychia
Cutaneous lesions
Onychocryptosis

Etiology

• improper nail trimming (too short and rounded, peeling or digging out of corners)
• trauma (shoe pressure, injury, adjacent toe rubbing against nail fold)
• congenital wide nail plate
• nail pathologies (ex. dystrophic nail)
• osteochondroma (raises and causes incurvation of nail plate)
Cutaneous lesions
Onychocryptosis

Osteochondroma
- dorsal elevation of nail plate contributing to ingrowing of toenail borders
- Delay onychoplasty for surgical excision of osteochondroma
Cutaneous lesions
Onychocryptosis

Acute without granuloma
• painful, incurvation of nail border
• Erythema, swelling, purulence if infection, no granuloma

Treatment
• nail packing and proper nail trimming if minimal pain
• onychoplasty if significant pain and recurrence history
Most Common Onychoplasty Procedures

- Phenol and alcohol
- Laser vaporization
- Winograd technique
Winograd Onychoplasty

- wedge resection of nail lip, plate, bed and matrix with rasping of matrix
- indicated in cases of hypertrophic nail lip accompanying chronic ingrown nail
- contraindicated if any evidence of infection as procedure is down to bone

Mercado OA, Atlas of Foot Surgery, 1979
Begin longitudinal split of nail border
Advance split in nail proximally through nail bed to matrix
Free up loose portion of nail border back to matrix
Remove free portion of nail border, look for attached "feathery proximal edge"
Phenol cauterization of toenail bed and matrix
Check nail groove for any loose matter
Lavage with alcohol
Cutaneous lesions
Onychocryptosis

Acute with pyogenic granuloma
Cutaneous lesions

Pyogenic granuloma

- Benign vascular tumor
- Exuberant granulation tissue, bleeds profusely on examination
- Raised, friable, sometimes associated with drainage
- Associated with paronychia, lytic portion of toenail
- DDX nodular melanoma, various carcinomas, biopsy depending upon clinical history
- I&D with removal of offending toenail border and excision of granuloma with biopsy
- C&S
- Antibiotics, local care
- Follow up with onychoplasty when healed if history of recurrent ingrown toenail
Onychocryptosis

Chronic with fibrosing pyogenic granuloma

- very hard nodule covered by normal to slightly reddish appearing skin

Treatment

- if symptomatic either laser onychoplasty or Winograd procedure
Paronychia

- Medial and lateral nail fold presentation similar to acute onychocryptosis without granuloma.
- Proximal presentation caused by bacterial growth under eponychium, exhibits erythema, edema, pain at eponychium.
- Advanced proximal case can result in proximal onycholysis, permanently dystrophic toenail if matrix damage.
- I&D, antibiotics, local care, avulsion in severe case.
Subcutaneous lesions

**Solid lesions**
- Morton’s neuroma
- Plantar fibromatosis
- Fibroma of tendon sheath
- Fibrosarcoma
- Lipoma

**Cystic lesions**
- Sebaceous cyst
- Epidermal inclusion cyst
- Mucoid cyst
- Ganglionic cyst
A Tumor-like Mass Located Within the Third Intermetatarsal Space

Morton’s neuroma

- Unique anatomy of interdigital nerve (naturally thickest at third webspace) makes it more likely to receive compression from the transverse intermetatarsal ligament, Betts, 1940
- Among 366 patients with neuroma, 91% were in the third webspace, Friscia, 1991
- Literature review shows approximately only 4% of neuromas occurring in both second and third interspaces simultaneously, Youngswick et al, 2004
Etiology of Morton’s Neuroma

- Repetitive trauma caused by hyperpronation
- Hypermobility
- Cavoid foot
- Hammer digit syndrome
- Hypertrophy of adjacent metatarsal heads
- Transverse intermetatarsal ligament tightness
Differential Diagnosis in Morton’s Neuroma

- Common digital nerve neuritis
- Capsulitis
- Bursitis
- Tarsal tunnel syndrome
- Metatarsalgia
- Inflammatory arthritis
- Interspace soft tissue mass causing pressure on common digital nerve ie. Ganglionic cyst
Conservative Treatment Options for Morton’s Neuroma

- Perineural cortisone injections combined with strapping and metatarsal pad
- Long term metatarsal padding in shoes or with orthotics
- Shoes with low heel and wide toe box
- Sclerosing techniques
- Physical therapy
- NSAID’s
- Minimally invasive cryoanalgesia (Painblocker through Wallach Surgical Devices, Inc.)
Surgical Treatment Options for Morton’s Neuroma

- Neurectomy
- Open transverse ligament release with or without nerve relocation
- Neurolysis
- Endoscopic nerve decompression
- Cryoneuroablation
- Minimally invasive nerve decompression (Kobygard)
Subcutaneous lesions

Solid lesions

- Fibrotic tissue disorder characterized by excessive collagen production
- Firm, solitary or multiple subcutaneous nodules arising from the plantar fascia
- Bilateral in 20% of cases
- Slow, progressive increase in size, locally aggressive
- Etiologies include trauma, medications, alcohol abuse

Plantar fibromatosis
Subcutaneous lesions

Solid lesions

Plantar fibromatosis

- Treatment options include
  - Off loading with accommodative orthotic
  - Cortisone injection
  - Transdermal verapamil gel
  - Surgical excision
- It is important to monitor these lesions due to potential for progressive increase in size
Subcutaneous lesions

Plantar fibromatosis
Subcutaneous lesions

Plantar fibromatosis
Subcutaneous lesions

Plantar fibromatosis
Subcutaneous lesions

Solid lesions

Fibroma of tendon sheath

- Painless, slow growing
- Firm on palpation, along tendon
- Male > female, young to middle age
- Clinical appearance suggests fluid filled lesion, fluctuance may help to r/o ganglion
- If aggressive, MRI, excision with biopsy, concern synovial sarcoma
Subcutaneous lesions

Solid lesions

Fibrosarcoma

- Deeply seated, painless subcutaneous mass
- Rapid increase in size
- All ages affected, middle age predominant
- As with melanoma, increased depth indicates greater penetration, metastasis
- Extensive differential diagnosis, almost any tendon sheath associated subcutaneous lump
Subcutaneous lesions

Solid lesions

- Most commonly seen soft tissue tumor
- Ankle, subfascial spaces,
- Slow growing, clinically non-aggressive
- Minimal pain unless creating pressure against adjacent nerves or fascia
- Differential diagnosis cystic lesion, rheumatoid nodule, sarcoma

Lipoma
Subcutaneous lesions

Solid lesions

• Progressive dilation of sebaceous gland duct
• Painful with increase in size
• Traumatic etiology causing duct blockage
• Plantar surfaces predominately
• Aspiration indicated for diagnosis and pain relief, thick, milky aspirate
• Often require excision

Sebaceous cyst
Subcutaneous lesions

Cystic lesions

- Invagination of epidermal tissue into dermal or subcutaneous tissue
- Raised, with erythema and pain on palpation
- Viscous, purulent aspirate
- Sterile cultures
- Traumatic etiology

Epidermal inclusion cyst
Subcutaneous lesions

Cystic lesions

- Translucent, nonpainful
- Seen proximal to eponychium, hands and/or feet
- Sometimes at level of distal interphalangeal joint, similar to ganglion
- Puncture aspiration may confirm diagnosis, often reoccurs
- Surgical removal if symptomatic and fails aspiration

Mucoid cyst

Sometimes at level of distal interphalangeal joint, similar to ganglion.
Subcutaneous lesions

Cystic lesions
- Out pocket of synovial tissue, arising at joints, tenosynovium, soft tissues, bone
- Middle aged, females predominate
- Usually not painful
- Traumatic etiology
- Diagnose with puncture aspiration
- Surgical excision if symptomatic and fails aspiration, must appreciate “stalk”

Ganglionic cyst
Soft tissue lesions

In general...

• Skin lesions are not always what they grossly appear to be – biopsy if there is any diagnostic doubt
• Suspect a solid mass if a subcutaneous lesion fails puncture aspiration, MRI and/or surgical excision with biopsy to confirm diagnosis
Thank you