Atypical Wound Cases: Diagnosis, Treatment and “Discussion”
Southeastern Society of Wound Ostomy Continence Nurses

September 2017
Marcia Spear, DNP, ACNP-BC, CWS, CPSN, CANS
Department of Plastic Surgery
Vanderbilt University Medical Center
Objective

• Discuss atypical wounds, etiologies and treatment options
Dr. Spear has no financial relationships or other conflicts of interest to disclose
Google Barometer

- “wounds” returns 107,000,000 pages
- “atypical wounds” returns 399,000 pages
- “atypical wound care: returns 242,000 pages
- In spite of narrowing the search…….
Look for the Zebras
Atypical Wounds

- Wounds due to uncommon etiologies
- Common etiologies include inflammatory causes, infections, vasculopathies, metabolic and genetic causes, malignancies and external causes
# Common Etiologies for Atypical Wounds

- **Inflammatory causes**
  - Vasculitis
  - Pyoderma gangrenosum
- **Infections**
  - Atypical mycobacteria
  - Deep fungal infections
- **Metabolic and genetic causes**
  - Calciphylaxis
  - Sickle cell anemia
- **Malignancies**
  - Squamous cell carcinoma
  - Basal cell carcinoma
  - Lymphoma
  - Kaposi’s sarcoma
- **Vasculopathies**
  - Cryoglobulinemia
  - Cryofibrinogenemia
- **External causes**
  - Bites
  - Radiation
Principles

- Multiple and numerous too many to count; however, 3 basic principles stand out
  - Reduce Edema
  - Reduce Bacterial Load
  - Maintain moist wound environment
- Other principles to consider with support by RCT specifically in wound care
  - Offloading
  - Nutrition
  - Managing the underlying cause
- Majority of supportive evidence exists based on multiple case studies, reliable clinician experiences

CASES
Case 1

- 41 year old male presented to ED with acute on chronic lower extremity pain and swelling with fever up to 103; washes legs daily and applies silvadene, xeroform, and abd pads and wraps with ace bandages; has no family history of familial lymphedema; has home health; lives with his mother who is primary caregiver
- PMH: HCV, endocarditis, heart murmur, venous stasis, chronic lymphedema
- PSH: Liver transplant
- Consulted Complex wound and Dermatology
Diagnosis, Discussion, Treatment Options

- Elephantiasis Nostras Verrucosa
- Results of chronic lymphedema causing cutaneous hypertrophy
- Uncommon, arising in the setting of chronic non-filarial lymphedema
- Biopsy due to malignant potential
- Aggressive management of edema
  - Elevation
  - Ambulation
  - Compression
- Topical wound care (Dakin’s wraps 15 – 20 minutes) q 12 hour
Case 2

- 51 year old male admitted from SNF for worsening non-healing scalp wounds; has been on oral antibiotics with no improvement; MVA age 20 with resultant paraplegia; mother has POA
- PMH: astrocytoma, diabetes, anxiety, seizure disorder, burns
- PSH: Skin grafts for burns, craniotomy
- Consulted complex wound, neurosurgery, plastic surgery
Diagnosis, Discussion, Treatment Options

- **Chronic cranial osteomyelitis**
- Non-surgical management
- Wound culture growing pansensitive Pseudomonas and also mixed gram negative/positive bacteria.
- Vancomycin and ceftazidime for six weeks
- Hydrogel and Dakin’s 0.025% moist packing into each draining sinus and larger wound of scalp; change q 12 hours
- Palliative care consult
- Transferred back to facility per mother’s request
Case 3

- 84 year old male admitted for GI bleed; consult for scalp wound
- PMH: atrial fibrillation, gastric reflux, restless legs, subdural hematoma, BCC cheek, osteoradionecrosis
- PSH: 5/27/11 Radical excision of angiosarcoma scalp with left cervical lymph node biopsy and skin grafting-skin/scalp left anterior; 3 Lymph nodes all negative. Radiation.
  1/16/17 CT head/neck: Lytic scalp/calvarial lesions likely represent primary skin cancer versus metastases. These extend to the inner table of the skull
Diagnosis, Discussion, Treatment Options

- Chronic non-healing lesions scalp – osteoradionecrosis and recurrent cancer with osteomyelitis
- Cleanse wound with NS- apply hydrogel to each wound and cover with dry gauze and tape in place;
- Change every other day as wife says it does better that way - resume home care once discharged
- No surgical intervention
Case 4

- 57yo M with history of Chronic Lymphocyte Leukemia (CLL) since 2011; presented to OSH with new left leg pain
- PMH: Hypertension, aortic mural thrombus, hepatitis-C from IVDU
- PSH: Bariatric Surgery with Sleeve 2014; Sigmoid colectomy for diverticulosis 1993 and hernia repair
Cryoglobulinemia vasculitis

Involving the helix of bilateral ears, right elbow, left forearm, right hand including all fingers and thumb, right 1st and 2nd toes, left entire foot and medial ankle

- Vancomycin/Zosyn
- Zovirax 400 mg po q12h
- Plasmapheresis
- Prednisone
- Pain control
- Hematology, Rheumatology, Dermatology, Palliative care and Complex Wound consults
Cryoglobulinemia Vasculitis

- Vasculitis of small blood vessels that is caused by deposition of immune complexes
- Most patients with cryoglobulinemia are chronically infected with hepatitis C virus (HCV)
- Skin, joints, and nerves are commonly affected
- Most patients have weakness or fatigue, and many have sore joints or muscles
- The most common appearance of vasculitis in the skin is purpura
- Skin biopsy
- Treatment with anti-viral therapy and immunosuppression
## Diagnosis, Discussion, Treatment Options

- Ears let demarcate for now
- Betadine q12h to fingers and toes
- Debrided left forearm
- Right elbow cleanse with NS, multidextrin gel, foam
- Left forearm: cleanse with NS, hydrogel, Dakin's moist gauze, xeroform to seal and keep wound moist d/t tendon exposure, kerlix roll, ace hand to elbow change q12h
- Left foot and ankle: cleanse with NS, antibiotic ointment thick layer, xeroform, kerlix roll change q12h
Left thumb amputation at the level of the IP joint.
Left index finger amputation at level of the PIP joint
Left long finger amputation at the level of the proximal phalanx
Left ring finger amputation at the level of the proximal phalanx
Left small finger amputation at the level of the proximal phalanx
Oral low dose cyclophosphamide (chemotherapy)
IV antibiotics (ampicillin and ceftriaxone) and will f/u with ID and hematologist post discharge
Case 5

• 74 year old female presented to ED from hematology clinic with low blood counts; reports she has noticed increased drainage from the buttock wounds over the past few days; she changes her dressings herself; has urinary incontinence

• PMH: COPD, DVT on coumadin, rheumatoid arthritis, hyperlipidemia, hypertension, venous stasis disease, hx femur fracture, colovaginal fistula

Hidradenitis Suppurativa
- Smoking cessation, hygiene, weight loss, glycemic control, avoidance of dairy products
- Topical (silvadene) and systemic antibiotics
- Daily showers
- Corticosteroids
- Hair removal in affected area if indicated
- Biologic therapy ie humira
- Incision, drainage, unroofing, excision
- Radical resection and/or skin grafting for cure
Diagnosis, Discussion, Treatment Options

- Chronic inflammatory disease of apocrine-bearing (sweat glands) skin causing occlusion of the terminal hair follicle
- Combination genetic, hormonal, mechanical, immunologic and environmental cause
- Affects 1 – 4% population
- Often hereditary
- Usually appears after puberty
Diagnosis, Discussion, Treatment Options

- Higher incidence in AA and women
- Tobacco use and obesity increase severity
- Painful relapsing nodules, abscesses, and hypertrophic scars with interconnecting sinus tracts and fistulas
- Intertriginous regions of the axilla, breast, inguinal folds, gluteal cleft and perineum
43 year old female presented for surgical excision of hidradenitis; she had been refractory to Prednisone, Doxycycline, Clindamycin, Rifampin, Bactrim, Dapsone, Cholchicine, Cellcept, Methotrexate, Imuran, Sirolimus, Enbrel, Humira, Remicade, Stelara, Cyclospirine.

PMH: cutaneous Crohn’s, non-ischemic cardiomyopathy, OSA on CPAP, reflux

PSH: diverting loop ileostomy, ileostomy closure, debridement x 2 for hidradenitis, laparoscopic cholecystectomy, tubal ligation, C-section, colostomy
She was discharged with HH to assist with dressing changes 6/16
Presented to the ED on 7/5 with nausea, vomiting, increased ostomy output and abdominal pain
Condition deteriorated to cardiogenic shock and multi-system organ failure
Expired 7/24
Case 7

- 60 year old male presented to ED for wounds of the face and shoulder; says the wound on his face appeared as a mole about 10 years ago, never sought treatment and it continued to grow; says the one on the left shoulder is from a burn he sustained 10 months ago and never healed; has been applying bacitracin twice a day to his face and shoulder; says he is still able to breathe through his nose; has a friend that helps him care for himself; lives in public housing; disabled
- PMH: mild anxiety, MRSA, low back pain, smoking
- PSH: none
Diagnosis, Discussion, Treatment Options

- Basal Cell face
- SCC left shoulder
- Marjolin’s tumor right shoulder
- Consults
  - Plastic Surgery
  - Dermatology
  - Simple Wound
  - Psychiatry
  - Palliative
  - Burn
  - Medicine
Marjolin’s ulcer

An aggressive ulcerating SCC presenting in an area of previously traumatized, chronically inflamed or scarred skin

They commonly present in the context of chronic wounds including burn injuries, ulcers, ulcers from osteomyelitis and post radiation scars

Malignant change usually occurs 10 – 25 years after the initial trauma

Poor prognosis
Diagnosis, Discussion, Treatment Options

- Metrogel to right shoulder with nonadherent dressing every 12 hours
- Bacitracin ointment to face q 12 hours; no dressing
- Palliative Care
Case 8

- 90 year old female presents in follow up in the plastic surgery clinic post excision of SCC of scalp and placement of Integra with VAC and ultimate STSG to scalp; first excision was 12 years prior with recurrence and ultimate radiation and hyperbaric treatments; for the most part the skin graft healed; left with a defect apex of the scalp 7 x 8 cm with scattered areas of crust and exposed bone, pulsations are visible; denies pain and discomfort, no drainage

- PMH: SCC, hypertension, hypothyroidism, osteoporosis, urinary incontinence, BCC, glaucoma, spinal stenosis

- PSH: TAH BSO, Excision SCC scalp x 2, MOHs BCC back
Diagnosis, Discussion, Treatment Options

- Radionecrosis scalp with recurrent SCC
- Hydrogel daily with nonadherent dressing
- Okay to shower
• 43 year old female presents with open wound of left lower abdomen ongoing for months with rashes and wounds; allergic to methadone. Numerous visits to ER
• Hx: Nec fasc from OSH, child abuse, chronic pain
• Wound with satellite lesions suspicious appearance
Skin Popping

describes intradermal or subcutaneous drug injections.

Cleanse with normal saline, apply silvadene q 12 hours, cover with xeroform and abd pad with medipore tape

Psychiatry consult
Case 10

- 43 year old male presents on June 16th with painful, bruised, hard nodules over legs and abdomen; was seen one month prior with a diffuse rash, nausea, vomiting and diarrhea; says the nodules are very tender and started as purplish discoloration with some areas now open; says he is receiving treatment for calciphylaxis

- PMH: aortic stenosis, adrenal insufficiency; hypertension, hypotension, ESRD on dialysis, depression, tachycardia, anemia, insomnia, hypercholesterolemia

- PSH: right knee arthroscopy, I&D groin abscess
Calciphylaxis
- Uncommon disease in which calcium accumulates in small blood vessels of the fat and skin tissues causing necrosis.
- Seen mostly in patients with stage 5 chronic kidney disease, but can occur in the absence of kidney failure.
- Results in chronic non-healing wounds and is usually fatal.
Diagnosis, Discussion, Treatment Options

- Pain management
- Cleanse wounds with normal saline
- Apply silvadene q 12 hours; cover with xeroform gauze and either abd and tape or wrap
- Sodium Thiosulfate 25% solution 12.5 g IVdaily
- Calcium and phosphate levels within normal limits
- No surgical intervention
- Was discharged 6/17 and readmitted 6/20 with increasing abdominal pain, nausea and chills
Symptoms progressed
- OR 6/26 with findings of necrotic right colon secondary to acute mesenteric infarction
- 6/30 palliative care consult
- 6/30 back to OR for revision ileostomy
- 7/10 back to OR for debridement and repair ventral hernia and NPWT placed
- Expired 7/21 due to mesenteric ischemia
Case 11

- 46 year old female with painful nodules and dark tissue of the breast; Had follow up in clinic for exam and work up but pt. lost insurance coverage; continued to have growing lesions on her breast and washed area with soap and water and covered it with a dressing; presented to hospital with drainage and inability to be around family and friends due to foul odor

- PMH: hypertension, breast cancer, diabetes
- PSH: arthroscopy, tubal ligation
• Malignant lesion
• Wash gently with baby shampoo and water, rinse and pat dry.
• Apply metrogel to area, cover with xeroform gauze, dry gauze and allow bra to hold in place
• Social worker consult
35 year old female presented to ER with fever and multifocal purpura for approximately 3 days from OSH; started in her feet and lower leg and has increased up her legs; feels tight and painful; injected heroine/cocaine cocktail and within a week noticed spreading rash and lesions on extremities; also injected meth 2 times past week; platelet count 11

PMH: cervical cancer, thyroid disease, COPD, substance abuse, bacterial endocarditis, PE, hepatitis C, complete AV block

PSH: TAH, BSO, tubal ligation, cholecystectomy, TVR, dual chamber pacemaker
Purpura fulminans

An acute, often fatal, thrombotic disorder which manifests as blood spots, bruising and discoloration of the skin resulting from coagulation in small blood vessels within the skin and rapidly leads to skin necrosis and disseminated intravascular coagulation.

- Platelets, cryo and rbc’s based on lab values
- Platelet count remained low
- Bacitracin ointment to all areas, wrap with xeroform gauze and kerlix rolls q 12 hours
Discharged to SNF 8/15 for wound care and IV antibiotics
Discharged from SNF 8/22
Readmitted to VUH 8/24
Wound care remained bacitracin, xeroform, kerlix rolls
Not a surgical candidate for debridement
Deceased 8/27
Case 13

- 53 year old AA male
- PMH - polysubstance abuse / non-compliance T10 level paraplegia 2/2 MVA; neurogenic bladder, pressure injuries, bladder calculus; hypospadias
- PSH – T6 – L2 spinal fusion 1989; removal of hardware 2001; colostomy; scrotal/penile surgery; cystoscopy (multiple); debridement and bilateral VY flaps for ischial pressure injury; back cutaneous flap for sacral pressure injury in ‘97; re- advanced skin flap in ‘98 for dehiscence
- Was followed in plastic surgery 1998 for six months; not seen until 2013
Osteomyelitis

IMPRESSION CT Scan Pelvis with Contrast:

1. Extensive soft tissue cellulitis, deep multifocal bilateral decubitus ulcers and possibly septic arthritis of the hips with interval lateral dislocation of the right femur with the right femoral head and right proximal femur residing external to the soft tissues of the pelvis.
2. Unchanged appearance of the left femur which exhibits chronic, degenerative changes with destruction of the left femoral head. Fluid in the left hip.
3. Large, deep sacral decubitus ulcers with likely chronic osteomyelitis of the posterior sacrum and ischial tuberosity, left greater than right. Extensive scrotal edema. Diffuse thickening/edema of the urinary bladder.
Diagnosis, Discussion, Treatment Options

- He is seen in the ED numerous times but leaves AMA
- He presented two weeks later and says he heard a pop in his hip; says he has been doing his dressings but it is noted he has the same dressings in place as when he recently left the hospital; still living with his sister and mother; is belligerent, yelling at staff that he is hungry and hasn’t eaten in two days; says he is leaving
Care complicated by psychosocial and behavior difficulties
Bone created additional pressure injury
Deemed incapable of making decisions
Meeting with ethics, palliative, psychiatry and plastics
Made DNR/DNI
Discharged to inpatient Hospice on Bactrim
Passed 10 days later
Case 14

• 40 year old female presented with lesion on her left leg; says she was bitten by her dog about a month ago with a small abrasion that she treated with neosporin and bandage, about a week ago there was more swelling and pain; saw her PCP who drained a hematoma; ultrasound showed no additional fluid; was referred to wound center who directed her to come to the ED

• PMH: anxiety

• PSH: tonsillectomy, C-section

• Wound and dermatology consults
Pyoderma gangrenosum
A rare condition that causes large, painful ulcers to develop on your skin, most often on legs
Appears to be caused by disorders of the immune system
Individuals with inflammatory bowel disease or rheumatoid arthritis are at a higher risk
Ulcers develop quickly, clear up with treatment but scarring and recurrences are common
Have violaceous borders
Diagnosis, Discussion, Treatment Options

- Cleanse with normal saline
- Hydrogel with saline moist gauze q 12 hours
- Switched to foam with silver for comfort and less trauma with dressing changes
- IV Solumedrol, Cellcept, Dapsone
- Discharged to follow up with dermatology
- Switched to hydrogel and gauze
Case 15

- 38F with history of tobacco abuse who is transferred from OSH for concern for necrotizing soft tissue infection. She reports a small pustule on her mons 1 week ago for which she went to the health department and was prescribed PO clindamycin and bactrim. The pustule worsened with spreading erythema and swelling and she returned to the health department 4 days ago and got a single dose of IV abx and was discharged with continued PO abx course. However, an area on her mons became black and she started draining purulent effluent from her mons with worsening pain and went to OSH for evaluation
Case 15

- PMH: No MRSA history, has had abscesses in the past but not to this extreme
- PSH: none
- Sedated and intubated
- She was taken urgently to the operating room with Urology and EGS for debridement
Diagnosis, Discussion, Treatment Options

- Necrotizing fasciitis
- Surgical emergency
- Taken back to OR for further debridement
- In SICU, on Levophed and Vasopressin
- Transfused 1u PRBC
- Receiving dressing changes with Dakin’s solution daily
Diagnosis, Discussion, Treatment Options

- **Necrotizing fasciitis** – “flesh eating disease”
- Death of soft tissues
- Normal skin flora
- Sudden onset and spreads rapidly
- Symptoms: red or purple skin over the affected area, pain, fever, vomiting
- Common areas are perineum and limbs
- Risk factors: immunosuppression, obesity, cancer, diabetes, alcoholism, IV drug use
Diagnosis, Discussion, Treatment Options

- Taken back to OR for further debridement weekly for two weeks
- Daily dressing changes
- Plastic surgery performed rotational flaps and skin grafts for closure 2 days after last debridement
Diagnosis, Discussion, Treatment Options

- HgbA1C 9.5
- Endocrinology consult: Diagnosed Type 2 DM
- Obesity
- Discharged post-op day 16 to LTAC
- Daily dressing changes with xeroform
Case 16

- 73 year old female presents with fever, swelling and pain in her right lower leg; says that it started just yesterday and has gotten progressively worse; says she has a fungus between her 2-3 toes that opens from time to time; walks barefooted at home
- PMH: hypertension
- PSH: C-section
- Complex wound consult
Diagnosis, Discussion, Treatment Options

- Vancomycin and Zosyn
- CT scan dermal thickening; no abscess
- Cover with xeroform, kerlix and ace wrap from toes to knee
- Elevate
- Bacitracin to open areas q 12 hours
• *Staphylococcus hominis* bacteremia
• Normally found on human skin and is usually harmless
• Can sometimes cause infections in people with abnormally weak immune systems
• Most, if not all, strains are susceptible to penicillin, erythromycin, and novobiocin
Diagnosis, Discussion, Treatment Options

- Blisters all open, skin dry
- Elta q 12 hours
- Interdry between toes
- Discharged on no antibiotics
Objective

- Discuss atypical wounds, etiologies and treatment options
"When you hear hoof beats, think of horses, not zebras"

Dr. Theodore Woodward
References

• Anderson, J., Hanson, D., Langemo, D., Hunter, S. & Thompson, P. (2005). Atypical wounds: Recognizing and treating the uncommon. *Advances in Skin & Wound Care.* 18 (9), 466 - 470


THANK YOU
marcia.spear@vanderbilt.edu