Abnormal Skin Findings

Carson Discher, MS1, Luke Mittelstaedt, MS1, Katherine Shapiro, MS1

[1] Department of Internal Medicine, University of Illinois at Chicago, Chicago IL, United States

Chief Complaint: Boil on the butt

History of Present Illness: 72 y/o male w/ no significant PMH presents to ED from clinic w/ painful, bleeding abscess on L buttock for the past 3 months. Pt states that he used "boil ease" at home when the boil first presented, but the boil reappeared 3 days PTA with yellow, malodorous drainage. Pt states that sitting or applying pressure to the area exacerbates the pain but benzocaine cream relieves the pain. Pt states that he had a boil on his buttock in the past, and that he currently has another boil behind his R ear. Pt also admits to one episode of dizziness described as feeling "drunk" while driving earlier today which resolved without any intervention. Pt denies having any episodes similar to this in the past and denies any difficulty ambulating to the clinic from his car. Pt denies eating breakfast this morning and feels that this could have contributed to his episode of dizziness. Pt also admits to having chills currently in hospital. Pt hopes to have an I&D. No further complaints at this time.

Past Medical History:
AAA s/p repair 2005. Hypothyroidism. Hypertension. Hyperlipidemia. CAD. CDK stage IIIb. COPD. T2DM.

Past Surgical History:
Aortic aneurysm repair; 2005, no complications

Medications:
Rosuvastatin 40mg oral tablet, 2 tab PO QHS. Metoprolol 50mg oral tablet BID. LT4. Plavix 75mg. Glipizide 5mg oral tablet. Temazepam 30mg oral capsule at bedtime. Clopidogrel 75mg oral tablet, PO daily. Gabapentin 100mg capsule, PO TID. Crestor 40mg. Lisinopril 5mg. Triamcinolone cream. Gentamycin cream. Benzocaine. Insulin aspart 100 units/mL injection.

Allergies:
NKDA

Social History:
Patient lives alone in a senior housing facility. His preferred language is Polish. Exercises by walking 1-2 times/week. He has smoked cigarettes for 6 years and averages 20-25 cigarettes/day. No EtOH (for the last 30 years), no drug usage. Not sexually active.

Review of Systems:
General: Fevers, chills. Skin: Right knee rash, no jaundice or pruritis. Head: New headaches, brief self-resolving episode of dizziness, no trauma. Eyes: No diplopia, redness, changes in vision. Ears: No hearing loss, earaches, tinnitus. Nose/sinuses: No bleeding, dryness, pain. Mouth: No bleeding gums, no dry mouth. Throat: No hoarseness, no dysphagia, no sore throat. Neck: No stiffness, no pain. Right post-auricular boil. Respiratory: No hemoptysis, no wheezing. Cardiac: No palpitations or chest pain. Gastrointestinal: No nausea, constipation, or abdominal pain. Urinary tract: No dysuria, no frequency. Musculoskeletal: No muscle pain, no joint pain or stiffness. Central nervous system: No seizures, vertigo, tremor, memory problems. Psychiatric: No depression, no anxiety.

OBJECTIVE:
Vital Signs: T 36.2C, P 70 bpm, RR 14, BP 130/69, SpO2 99% RA

Labs/Imaging:
CBC 12/11/19: WBC:10.0RBC: 4.48MCV: 99.7HgB: 15.3HCT: 44.7Plat: 191%NEUT: 76.8%LYMPH: 13.0%MONO: 8.5Lactic acid: 3.5
Electrocardiogram: 12/11/2019 1:26:00 PM: rate 74, normal sinus rhythm, No ST-T changes, no ectopy, normal PR & QRSintervals, EP Interp.

Physical Exam:
General Appearance – NAD, Well appearing. HEENT – Normocephalic, atraumatic. Neck – Supple, No stiffness, No midline TTP. Cardiovascular – RRR, no M/G/R, normal s1, s2. Lungs – CTAB, no crackles, no wheezing, no distress. Abdomen – Soft, nontender, no distention, BS normal. Back – No ttp, no obvious deformity. Extremities – No cyanosis, no clubbing, no edema. Neurological – AAOx3, moving all extremities against gravity, normal gait. Skin – Warm, dry, TTP 6cm x 4cm area of erythema with central lesion draining yellow fluid to R buttock. Pt has lesions on back as well.

Diagnosis

Patient is a 72yo male with PMHx of CAD, KCD3, COPD, DM2, AAA, s/p repair (2005), hypothyroidism, and HTN presenting to the ED from clinic due to gluteal abscess that is concerning for cellulitis.

#Gluteal abscess
•Three month hx of left gluteal abscess, worsening over last four days with associated pain and chills
•I&D in ED
•Patient given zosyn, levofloxacin, Bactrim, and flagyl in ED
#Cellulitis
•Poorly demarcated, erythematous region surrounding abscess marked with a marker. Currently 3x5cm
#Erisypelas
•Infection of superficial lymphatics and upper dermis
•Low on DD because of poorly demarcated border
Plan:
•Wound consult
•Start vancomycin/zosyn until culture results come back
•Deep tissue culture

#Dizziness
•Reports 5 minutes of dizziness this morning with chills, no associated trauma
•Patient was administered 2L, IVF in ED, with improvement of symptoms
Plan:
•Continue antibiotics as above for infection

Discussion of Disease Process/Clinical Correlations

The most common cause of skin abscesses is Staphylococcus aureus, a catalase-positive, B-hemolytic Gram negative cocci that grows in clusters. S. aureus is part of normal flora of human skin and colonizes the nose. It is the most common cause of septic arthritis, osteomyelitis, and can cause acute bacterial endocarditis.

P/O vancomycin is not recommended because of the subsequent low absorption and low serum concentration. The antibiotic cannot pass the gastric lining, so it is administered intravenously to achieve higher bioavailability. P/O vancomycin may be used for Clostridium difficile and enterocolitis. Pt should also be monitored for hypersensitivity reactions The most common is Red Man Syndrome, an infusion-rate-related reaction in which Vancomycin directly stimulates mast cells to release histamine, as in allergic reaction, without the involvement of IgE.[1] Another reaction to be monitored via eosinophil levels is DRESS.

This Pt should be monitored for sepsis, which has symptoms such as hypotension, shock, tachycardia, tachypnea, f/c. Pt is elderly which means his immune system does not function at as high of a level as it did in the past and the infection reaching the blood (bacteremia) is more of a concern.

Microorganisms can seed joints during hematogenous dissemination. Staphylcoccus aureus is the main causative agent. Septic arthritis usually involves a single joint, most commonly the knee.

Current Research and New Treatments

Aspirin has been shown to prevent infection-induced coagulopathy in mice during sepsis due to S. aureus. *Carestia et al* found that mice pre-treated with aspirin had reduced platelet aggregation and intravascular thrombin activity and microvascular occlusion compared to their untreated S. aureus-infected counterparts.[2]

Recent reports have outlined new therapeutic avenues and for reducing mortality in severe sepsis. Mouse models have shown positive effects of a pyruvic acid derivative, ethyl pyruvate. Fibrates (fenofibrates) have been shown to reduce mortality rates in experimental studies done on sepsis. Furthermore, levosimendan, a calcium-sensitizing drug, was shown to improve outcomes in sepsis patients.[3]

It is recommended that patients with sepsis without shock be treated with empiric broad spectrum antibiotic therapy with one or multiple antimicrobials to encompass all possible pathogens. This means that treatment should be provided against both gram-positive and gram-negative organisms if bacterial sepsis is indicated, against possible fungi if a fungal infection is indicated and against viruses (rare). A cohort study showed that inappropriate antibiotic selection was occurring 32% of the time in those with sepsis and mortality was markedly increased in these patients compared to those with appropriate antibiotic selection.[4]

Septic arthritis most commonly arises due to hematogenous seeding of the synovial membrane of joints. The synovial membrane has no limiting basement membrane and this allows microbes to enter the joint space. This is most commonly caused by S. Aureus. [5]

Spread of S. Aureus infection is not limited only to septic arthritis of synovial joints. It is important to ask the patient of any other symptoms such as back pain, fever and sweats, LUQ abdominal pain, costovertebral angle tenderness, and headaches. These collectively occur in up to 30% of adults with S. Aureus bacteremia and are indicative of potential vertebral osteomyelitis, endocarditis, splenic infarction, renal infarction, and septic emboli, respectively.[6]

CONCLUSIONS

This patient presents with clinical signs of *S. aureus*-mediated superficial abscess on the gluteal region with potential sepsis. The erythematous, warm region of skin with central, pus-filled, tender lesion on the left buttock suggests bacterial infection and the patient's history of unexplained dizziness and reported chills suggest the possibility of hematogenous spread. The patient presents afebrile, without leukocytosis and normal heart rate, which point away from sepsis, so definitive diagnosis cannot be made without the results of wound culture and blood panel. However the patient has moderately elevated lactate, which could indicate tissue ischemia/hypoxia and anaerobic metabolism, which are signs of sepsis/shock. However, usually you would see a lactate of >4. The most immediate action, as a physician, is to provide intravenous antibiotics and to document initial findings of the abscess in order to track its development and progress with time.

REFERENCES

1. Weller, Peter F. "Vancomycin Hypersensitivity." *UpToDate*, 15 Nov. 2019.
2. Carestia, Agostina, et al. "Acetylsalicylic Acid (ASA) Inhibits Intravascular Coagulation during S. Aureus-Induced Sepsis in Mice." *Blood*, 2020, doi:10.1182/blood.2019002783.
3. Polat, Gizem, et al. "Sepsis and Septic Shock: Current Treatment Strategies and New Approaches." *The Eurasian Journal of Medicine*, vol. 49, no. 1, 2017, pp. 53â€"58., doi:10.5152/eurasianjmed.2017.17062.
4. Schmidt, Gregory A, and Jess Mandel. "Evaluation and Management of Suspected Sepsis and Septic Shock in Adults." *UpToDate*, 11 Feb. 2020.
5. Goldenberg, Don L, and Daniel J Saxton. "Septic Arthritis in Adults." *UpToDate*, 26 Sept. 2019.
6. Fowler, Vance G, and Thomas L Holland. "Clinical Approach to Staphylococcus Aureus Bacteremia in Adults." *UpToDate*, 10 Jan. 2020.

Enormous thanks to both Dr. Bounds and Dr. Twing for their time and contributions towards our education and growth towards becoming physicians ourselves.