

Bartholin cyst abscess incision and drainage complicated by antibiotic-induced acute kidney injury

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Abstract

We report on a case of a young female who presented with a Bartholin cyst abscess with a failed Incision & Drainage (I&D) and Wood's catheter placement in the ED, requiring examination under anesthesia to evacuate an expanding hematoma and subsequent incision and drainage of the abscess. The hospital course was complicated by an oliguric acute injury caused by empiric antibiotic treatment with vancomycin, piperacillin-tazobactam, NSAID pain management, and the addition of oral Bactrim post-operatively. By day 3, nephrotoxic agents were all held as baseline creatinine 0.54 [ref: 0.60 - 1.30] mg/dL increased and plateaued at 8.3 mg/dL by day 9. She was discharged without further antibiotics, restrictions from NSAID's, and Tylenol for pain control with weekly BMPs to follow-up with Nephrology.

Keywords: Bartholin cyst; Bartholin abscess; Incision & Drainage; Vancomycin; Piperacillin-tazobactam; Acute kidney injury

Background

Bartholin glands are mucus-secreting glands located bilaterally on the lower portions of the vaginal introitus at 4 and 8 o'clock [1]. While they are not normally palpable, cysts and abscesses are a common due to obstruction. 2% of gynecologic visits a year are due to symptomatic Bartholin cysts or abscesses [1]. Increasing pain, edema, fluctuance, induration, or purulent drainage are all indications of an abscess and require management with incision and drainage, Wood catheter placement, and potential antibiotics [1]. Bartholin abscesses greater than 2 cm do not normally resolve on their own and require drainage to prevent reoccurrence [2]. Bartholin abscesses have frequent rates of reoccurrence (38%) and therefore adequate preliminary treatment is crucial [3].

Case Presentation

21 y/o female G0 with no past medical history presented to the emergency department with an enlarging Bartholin cyst for the past 3 months. 3 months prior, she had an STD exposure and dysuria and was empirically treated with ceftriaxone and azithromycin, with subsequent positive nucleic amplification assay for both gonorrhea and chlamydia. She also had a Bartholin cyst which providers recommended a trial of warm compresses and sitz baths. However, for the past 2-3 days, the cyst had been enlarging with increasing tenderness (especially with walking/sitting), subjective fevers and chills.

On admission, patient presented with a BP 118/67, pulse 112, and temperature 37.9 °C (100.3 °F). On her exam, her left labium was edematous and tender with a small mobile fluctuant area that was very tender. In the ED, an Incision & Drainage (I&D) and Word catheter placement was attempted and unsuccessful with no external drainage.

On labs, she had a significant leukocytosis with a left shift (WBC 23.2 [ref: 4.8 - 10.8] 10E3/uL, 84.2% [ref: 37.0 - 75.0 %] neutrophils), Blood Urea Nitrogen (BUN) 14 [ref: 7 - 25] mg/dL, and creatinine (Cr) 0.54 [ref: 0.60 - 1.30] mg/dL. On CT pelvis without contrast, a 6.8 x 4.5 x 4.9 cm cystic mass in the left labium was noted.

Gynecology admitted the patient for IV antibiotics (Vancomycin and piperacillin-tazobactam), Tylenol/ibuprofen for antipyretic and pain management, and kept patient NPO for potential examination under anesthesia if no improvement. Within a few hours she was persistently febrile, tachycardic, and the abscess site increased in size to about a 10 x 5 cm. She was taken to the OR where hematoma was detected and evacuated from the previous I&D site and drained a moderate amount of purulent fluid from the left labia majora, which was sent for culture. Postoperatively, she was started on PO Bactrim every 12 hours for 7 days.

Her repeat CBC after 24 hours showed an elevated Cr 2.24 [ref: 0.60 - 1.30] mg/dL and normal BUN 14 [ref: 7 - 25] mg/dL with an elevated vancomycin level of 53 mcg/mL. She was given a 500 cc lactated ringers bolus, then D5W 0.45% NaCl IV fluids were up titrated

from 50 mL/hr to 150 mL/hr, and pharmacy adjusted her vancomycin. Overall, the patient was well-appearing with some mild nausea and vomiting, 24 hours afebrile. Her WBC count down trended to 18.4 [ref: 4.8 - 10.8] 10E3/uL.

On day 3, her acute kidney injury continued to worsen with AM labs showing Cr 4.57 [ref: 0.60 - 1.30] mg/dL. At this time, all nephrotoxic drugs were discontinued (Motrin, Vancomycin, piperacillin-tazobactam, and Bactrim). IV fluids were continued with supportive care; daily weights and urine outputs were monitored. Blood cultures, urine cultures, and vulvar cultures remained negative. MRSA nares were negative. Renal ultrasound was negative. HIV was negative.

The next few days (day 4 to 7), Cr continued to trend upwards 6.32 mg/dL, 7.55 mg/dL, 8.30 mg/dL, 8.55 mg/dL as the vancomycin level slowly trended downwards from 39.1 mcg/mL to 30.4 mcg/mL. Cr began to plateau around 8.3 mg/dL by day 9 and the patient was discharged with weekly BMPs and outpatient follow-up with Nephrology. She was given one 1L normal saline bolus prior to discharge.

Discussion

Empiric antibiotic therapy in Bartholin abscesses are indicated in the setting of signs of systemic infection such as fever, tachycardia, and increasing erythema, tenderness, or fluctuance. Empiric antibiotics should cover anaerobes and gram negatives due to native vaginal flora as well as gram positives such as Staph and specifically MRSA [1]. Recently, studies have shown E.coli commonly implicated in Bartholin gland abscesses, making amoxicillin-clavulanate an appropriate empiric outpatient choice [4]. Inpatient admission is recommended in patients with worsening infection, temperature greater than 38°C, tachypnea, tachycardia (greater than 90 bpm), or worsening white blood cell count (> 12,000) [2]. These patients should be monitored more closely with IV antibiotic coverage. Sexually transmitted infections are also commonly implicated, studies have shown STI's play a role in causing Bartholin cyst abscesses and therefore, STD testing can be considered in these settings [5].

While antibiotic choice is up to clinical judgement, it is recommended to cover for MRSA in the inpatient setting, typically with the use of vancomycin [1]. For broad empiric coverage, vancomycin is commonly combined with cefepime, carbapenems, or piperacillin-tazobactam. Nephrotoxicity is a well-established side effect of vancomycin, anti-inflammatory drugs, and other systemic antibiotics [6]. The incidence of vancomycin-induced acute kidney injury is estimated from 1.0 to 42%, with increased risk in patients on other nephrotoxic drugs, prolonged treatment, and high daily dosing [7-10]. Therefore, it is important to monitor the serum levels, volume status, and creatinine of patients and to be wary of nephrotoxic drug combinations [6]. Systemic reviews are increasingly commenting on the increased incidence of acute kidney injury due to the combination of vancomycin and piperacillin-tazobactam as opposed to other drug combination therapies (cefepime or meropenem) [11]. A meta-analysis of 47 cohort studies with 59,984 patients showed higher

nephrotoxicity rates of vancomycin and piperacillin-tazobactam combination therapy than monotherapy or combination with meropenem/cefepime [12]. This drug combination is commonly implicated in the incidence of AKI during empiric antibiotic therapy and caution should be used in checking for concomitant NSAID pain control that would further reduce GFR. Additional caution should be taken in patients who recently received IV contrast for imaging studies. It is important to de-escalate therapy as soon as possible, however cultures do not always yield a proper organism or sensitivity, such as in this case.

Conclusion

When antibiotics are indicated in the treatment of Bartholin abscesses, it is important to remain cautious of side effects of combination empiric treatment. Nephrotoxicity is a common side effect of several antibiotics and it is important to find a low-risk drug combination when covering for MRSA as well as gram negative/anaerobes. Vancomycin and piperacillin-tazobactam are a common empiric drug therapy but are increasingly implicated in causing nephrotoxicity in healthy populations. When using vancomycin, it is important to maintain euvoletic volume status in patients as well as diligently follow basic metabolic panels and serum trough levels. Similarly, the use of NSAIDs for pain control and IV contrast dye should be avoided in these patients. Cultures may not always yield a proper organism to de-escalate therapy but amoxicillin-clavulanate is an appropriate choice for coverage when switching to oral therapy in the setting of Bartholin abscesses. STTs are also potential cause of infection of Bartholin glands and should be evaluated in populations at risk.

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