A case of Fournier’s gangrene following a large-volume hydrocelectomy in a diabetic patient managed with SGLT-2 inhibitor therapy

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ABSTRACT

Dapagliflozin (Farxiga), is an SGLT-2 inhibitor commonly indicated for the treatment of diabetes mellitus type 2 (DM 2), heart failure, and chronic kidney disease. One rare side effect associated with SGLT-2 inhibitors is bacterial infection of the genitalia. There are several case reports highlighting the incidence of Fournier’s gangrene (FG) in patients who take medications within this drug class. We report a case of FG in a diabetic patient on dapagliflozin who presented following scrotal hydrocelectomy for a large-volume hydrocele. The patient was urgently taken to the operating room for scrotal debridement and recovered well in the post-operative period.

1. Introduction

In 1883, Jean Alfred Fournier published a case series of five males who presented with similar symptoms manifesting as a gas-gangrene infection of the scrotum and penis. What would become known as Fournier’s gangrene (FG), this infection requires broad spectrum antibiotics and urgent surgical intervention given its high mortality rate of 20–30%. Moreover, its incidence continues to rise due to an increased prevalence of diabetes mellitus (DM) – a well-known risk factor of FG. Drug classes like SGLT-2 inhibitors have emerged as effective treatments for DM 2. In 2018, however, a warning was released by the Food and Drug Administration (FDA) highlighting the relationship between this drug class and FG. There are case reports describing this association, but we report the first incidence of FG in a diabetic patient managed with an SGLT-2 inhibitor following large-volume hydrocelectomy.

2. Case

The patient is a 64-year-old male with a history of DM 2 managed with dapagliflozin and metformin. Additionally, the patient endorsed a history of atrial fibrillation and coronary artery disease and was status post aortic valve replacement managed on aspirin and warfarin. He initially presented for evaluation of an enlarging, painful left hemiscrotum over the previous few years. Physical examination was consistent with a large left hydrocele and scrotal ultrasound confirmed the diagnosis. The patient elected to proceed to hydrocelectomy after understanding the risks and benefits of surgical intervention.

Prior to surgery, the patient was transitioned off of coumadin via lovenox bridging. Surgery was without complications, and the patient was given antibiotics intraoperatively. The traditional hydrocelectomy approach was carried out, excising the excess sac and oversewing the edges of the remaining sac for hemostasis. A total of 1.1 L of fluid was evacuated from the hydrocele sac. A decision was made to leave a Jackson-Pratt (JP) drain. The patient was seen on post-operative day two and completed his lovenox bridge and re-started coumadin. Due to continued drainage, the JP drain was maintained until output was scant at two weeks. Following removal, serosanguinous output was appreciated from the old drain site during an office visit. Normal post-operative scrotal swelling was noted on physical exam. A wound culture of the drainage was obtained, and the patient was started on antibiotics.

On post-operative day 18, the patient presented to the emergency department with dark drainage from the JP site along with elevated glucose levels over the previous few days. Physical exam demonstrated erythema, blistering, and tenderness to palpation over the left hemiscrotum with a persistent and foul-smelling ooze from the old JP site. Computed tomography of the scrotum demonstrated a collection of fluid with surrounding inflammation. A drain was placed and a specimen was sent for bacterial and fungal culture. The patient was started on broad-spectrum antibiotics and continued on his gliclazide and metformin.

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tomography (CT) scan of the pelvis demonstrated an 8.5 x 7-cm fluid collection along with subcutaneous air within the midline of the patient’s scrotum concerning for FG (Fig. 1). An international normalizing ratio (INR) value was found to be 5.3. The patient’s INR was emergently reversed, he was started on broad-spectrum intravenous antibiotics, and a decision was made to urgently proceed to the operating room for scrotal exploration, hematoma evacuation, and FG debridement.

In the operating room, the patient was placed in the dorsal lithotomy position. After incising the scrotal skin, old clot was evacuated and several areas of necrotic tissue were debrided. The left testicle and spermatic cord appeared viable. The wound was irrigated and packed and the patient was transferred to the floor. The patient recovered well in the post-operative period and did not require any further debridements (Fig. 2). The SGLT-2 inhibitor was stopped, and he was restarted on his blood thinner. The patient was discharged from the hospital on post-operative day nine on intravenous antibiotics, and he ultimately underwent complex scrotoplasty two months after discharge (Fig. 3).

3. Discussion

Infection is a common post-operative complication. According to a study that examined three surgical approaches for hydroceles, hematoma, pain, and infection were the top complications following hydrocelectomy. An infection rate of 0–4.5% was recorded amongst the three methods. While common wound infections were described in this study, only one case report in the literature describes the phenomenon of FG following routine hydrocelectomy, highlighting the rarity of this complication in this routine outpatient surgery.

By 2020, just over 50 patients on SGLT-2 inhibitors had been diagnosed with FG and were reported by the FDA. Less than 10 case reports exist in the literature highlighting the incidence of FG in diabetic patients managed with SGLT-2 inhibitor therapy with the majority being managed on dapagliflozin. None of these cases were diagnosed following a surgery.

Several measures were taken in order to prevent post-operative complications in our patient. We elected to leave a drain due to the high-volume hydrocele. It has been reported that there is no relationship between drain placement and an increased risk of complications following hydrocelectomy. Appropriate measures were also taken peri-operatively to safely bridge the patient from a blood thinning
standpoint in an attempt to reduce the risk of stroke and scrotal hematoma formation. We believe that a significant risk factor for FG development in our patient was the concurrent use of an SGLT-2 inhibitor. Our patient had been on SGLT-2 inhibitor therapy for one and a half years, falling well within the reported range of time for patients who develop FG while taking an SGLT-2 inhibitor. An exact mechanism accounting for FG incidence in patients on SGLT-2 inhibitors has not been established, and the relationship is unclear as many patients on this medication suffer from medical co-morbidities typically associated with FG. For this reason, more research must be conducted investigating the incidence of FG in those patients managed on SGLT-2 inhibitor therapy.

4. Conclusions

Given the 2018 FDA warning regarding the possible relationship between SGLT-2 inhibitor therapy and FG, it is pertinent for the practicing urologist to be suspicious of FG in diabetic patients managed on these medications who present following scrotal surgery with infections of the genitalia.

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Declaration of competing interest

None.

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