Urethro-cavernosal-spongiosal fistula after intralesional mitomycin C for recurrent urethral stricture disease

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ABSTRACT

Intralesional mitomycin C after direct visual internal urethrotomy for recurrent urethral stricture disease in patients suboptimal for open urethroplasty is an established option. We report a case of urethro-cavernosal-spongiosal fistula after intralesional mitomycin C into an area of previous dorsal inlay urethroplasty. The patient presented with pus draining from the urethral meatus ten days after treatment. Sterile abscesses developed within the corporal and spongy bodies, draining freely into the urethra. Complete spontaneous healing followed short-term transurethral catheterization and antibiotic prophylaxis.

Introduction

Multimorbid patients with urethral stricture disease are challenging to manage. Patients that suffer from vascular incidents often end up with proximal bulbar strictures. Some of these are related to prolonged transurethral catheterization during intensive care, others suffer from relative hypoperfusion of the bulbar urethra during episodes of hypotension. The bulbar urethra has a dual blood supply, proximal from the bulbular urethral arteries, and distal via the dorsal penile arteries via the glans to the urethra. The search for non-operative solutions to treat recurrent stricture disease is ongoing. Mitomycin C (MMC) is an antibiotic isolated from Streptomyces caespitosus with antiproliferative properties. A study involving intraurethral mitomycin C in an experimental setting in rats, low dosages caused less fibrosis and higher dosages were toxic. Topical application of MMC inhibits fibroblast proliferation thus producing less type I collagen to limit scar formation. Intralesional MMC has shown potential to treat recurrent bladder neck contractures. We report about the development of an urethro-cavernosal-spongiosal fistula after transurethral intralesional MMC injection for the treatment of recurrent bulbo-penile stricture disease in a multimorbid patient.

Case presentation

In 2011, a 66-year-old patient presented to the urology outpatient clinic with a weak urinary stream and incontinence after an open retroperitoneal radical prostatectomy five years ago. Comorbidities are psoriasis vulgaris, obesity, hypertension and cardiovascular disease having suffered from a myocardial infarction 2001, and degenerative lumbar vertebral problems. The uroflow rate was 3,3ml/s with more than 50% residual of the bladder capacity of 650ml. The retrograde urethrogram demonstrated a tight proximal bulbar urethral stricture. Urethroscopy showed the stricture and multiple intraurthral calcifications. A dorsal inlay urethroplasty with a 3 × 5cm free thinned-out inner foreskin flap corrected the stricture (Fig. 1). At this stage, there were no clinical signs of lichen sclerosis. A transobturator retroluminal male sling treated the urinary incontinence. All went well for five years when the patient presented again in 2016 with a weak urinary stream. On clinical examination, he had meatal stenosis with signs of lichen sclerosis. Careful urethroscopy showed a tight urethral stricture just distal to the dorsal inlay foreskin patch. The meatal stenosis was dilated, and an internal urethrotomy done for the proximal penile urethral stricture. Intralesional mitomycin C was given at a concentration of 0,4mg/ml for a total of 1,6mg (Fig. 2). The patient was without symptoms for a whole year. In 2017, the same procedure was repeated. Six months after the second internal urethrotomy and intralesional MMC, the proximal urethral stricture recurred including narrowing of the distal urethra up to the meatus. The cardiovascular status of the patient deteriorated and a third dilatation and direct visual internal urethrotomy (DVIU) with intralesional MMC performed. One week after removal of the transurethral
catheter, which remained for five days after surgery, the patient complained of pus draining from the urethra. Urine cultures remained negative. Micturition cystourethrography (MCUG) demonstrated contrast solution entering into the corpora spongiosa and cavernosum at the site of the dorsal inlay. Penile sonography and CT scan confirmed the urethro-cavernosal-spongiosal fistula (Fig. 3). Gentle manual pressure onto the base of penile shaft drained the abscess quite effectively. The patient was otherwise asymptomatic. A 16 French transurethral catheter drained the bladder for 1 week and ciprofloxacin 500mg twice daily given for 10 days. Follow-up MCUG and penile sonography confirmed resolution of the fistula. Later in 2018, the lichen sclerosis of the penile urethra worsened for which the patient receives regular urethral dilations. The cardiovascular status of the patient precludes surgery because of the high risk for general anaesthesia.

**Discussion**

In 2007, the effects of treatment with mitomycin C in anterior urethral stricture recurrence after internal urethrotomy were published. There was a fair amount of controversy concerning the dosage and application to be intraluminal, intralesional or suburothelial, whether it should be repeated and if how often. Evidence suggests it to be useful in patients who are suboptimal candidates for open reconstruction. Lichen sclerosis poses an altogether different problem for which MMC is not recommended. We know that intravesical MMC given after transurethral resection of bladder tumour with extravasation has led to serious fistula formation. In our case, intralesional injection of MMC involved the area of the previous dorsal inlay in the proximal bulbar urethra. This possibly predisposed the patient to develop the urethro-cavernosal-spongiosal fistula. As all microbiotic cultures remained negative, and the pus drained freely, spontaneous recovery was uneventful. The DVIU might also cause a fistula, but as there was no bleeding during or after the procedure, and the delayed presentation of the urethral discharge makes it highly likely that the mitomycin C lead to formation of the fistula.

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**Fig. 1.** A and B) Urethral stricture with extensive intraurethral calcifications as seen on urethroscopy with a guidewire in position. C) Short tight proximal bulbar urethral stricture as seen on retrograde urethrography. D) Post-surgery result after dorsal inlay urethroplasty with arrows indicating the length of the patch during micturition cystourethrography (MCUG).

**Fig. 2.** A) Endoscopic view of recurrent urethral stricture at distal end of inlay urethroplasty. B) Retrograde urethrography showing recurrent urethral stricture at distal end of inlay urethroplasty. C) Intralesional mitomycin C given after direct visual internal urethrotomy. Arrow indicates the proximal healed dorsal inlay graft. D) Calibre difference on MCUG indirectly indicating distal urethral lichen sclerosis.

**Fig. 3.** A) MCUG showing extravasation into corporal and spongious bodies indicating presence of urethro-cavernosal-spongiosal fistula ten days after intralesional mitomycin C in the area of the previous dorsal inlay urethroplasty. B) Liquefaction of tissues within both spongious and corporal bodies indicated with arrows on contrast CT scan. C) Urethroscopy showing intact urothelium six weeks after healing. D) MCUG six weeks after spontaneous healing of fistula without any signs of extravasation.
Conclusion

Urethro-cavernosal-spongiosal fistula after transurethral intracavernosal mitomycin C for recurrent urethral stricture disease is a potentially very serious complication. Spontaneous recovery in this multimorbid patient was fortunate. MMC for the therapy in urethral stricture disease still needs further intensive investigation. The use should be limited for individualized cases in competent hands, preferably at centers of expertise in controlled studies. Finding ways to treat recurrent urethral stricture disease in patients with many comorbidities would save these patients from living with transurethral or suprapubic catheters. Intracavernosal MMC after dorsal inlay urethroplasty is contraindicated.

Declarations of interest

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