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V Edition of the Clinical Cases Contest on

non-surgical clinical management of Kidney Stones

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Title: Canoxidin®, a food supplement useful for urological catheters.

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1. Abstract

A 67-year-old male patient underwent laparoscopic extraperitoneal radical prostatectomy on 15/01/2024. On the 10th postoperative day, a urethrorectal fistula was identified, necessitating a diversion ileostomy and bilateral nephrostomy placement to minimize fistula output. After the interventions, the patient experienced recurrent urinary tract infections caused by multidrug-resistant bacteria, requiring multiple hospital admissions. Following several antibiotic treatments, Canoxidin was added, leading to reduced nephrostomy catheter calcification and no further hospitalizations for this reason.

2. Introduction

Canoxidin® is a dietary supplement combining L-methionine, phytate, and theobromine, which prevents the crystallization of urinary salts, thereby avoiding calcifications in catheters, urological tubes, stoma bags, or nephrostomy tubes. This compound combines the acidifying action of L-methionine with crystallization inhibitors such as phytates and theobromine.

In this case, we examine the evolution of a patient with bilateral nephrostomy catheters and a vesical catheter before and after taking Canoxidin®.

3. Clinical Case description

a. Patient information / Medical records

Relevant Medical History:

- No known allergies.
- Smoker.

- Hypertension (HTA). Dyslipidemia.
- *Frontal epilepsy with focal motor seizures.
- Moderate aortic stenosis.

Urological History:

- Diagnosis of prostate cancer (10/2023): Gleason 8 (4+4) in the right lobe, PSA 4.89 (under treatment with tamsulosin/dutasteride).
- Negative extension studies with CT and bone scintigraphy --> cT1cN0M0.
- Laparoscopic extraperitoneal radical prostatectomy (PRL) + iliac-obturator lymphadenectomy (15/01/2024): pT2aN0cM0-R0 (AP: Gl 8, right lymph nodes 0/1, left lymph nodes 0/4).
- Postoperative PSA (04/2024 and 07/2024): <0.03.
- Discharge ileostomy (26/01/2024) after diagnosis of a 2 cm urethrorectal fistula.
- Bilateral percutaneous nephrostomy placement (02/02/2024) + vesical catheter. Pending fistula repair surgery due to incidental discovery of lymphoma, currently undergoing chemotherapy.
- Incidental diagnosis of lymphoma during follow-up of urethrovesical fistula, under chemotherapy.

b. Diagnostic support studies and results

Urine Cultures:

- (26/02/2024): 50,000 CFU/ml of Escherichia coli ESBL and 100,000 CFU/ml of Enterococcus faecalis, sensitive to amoxicillin/clavulanic acid and ertapenem.
- (13/03/2024): >100,000 CFU/ml Candida albicans.
- (03/04/2024): >100,000 CFU/ml Candida albicans and Escherichia coli ESBL, sensitive to amoxicillin/clavulanic acid and ertapenem.
- (03/05/2024): SV: >100,000 CFU/ml Klebsiella pneumoniae and Escherichia coli ESBL, sensitive to cefotaxime, ertapenem, and gentamicin.
- NPC: >100,000 CFU/ml Escherichia coli ESBL, sensitive to amoxicillin/clavulanic acid, gentamicin, and fosfomycin.
- (26/06/2024): NPC: >100,000 CFU/ml Escherichia coli ESBL and Klebsiella pneumoniae, sensitive to amoxicillin/clavulanic acid and fosfomycin.

- (27/07/2024): UC: >100,000 CFU/ml Pseudomonas aeruginosa, sensitive to piperacillin/tazobactam, ceftazidime, tobramycin, ciprofloxacin, and levofloxacin.
- NPC: Negative cultures.
- (28/08/2024): SV: >100,000 CFU/ml Enterococcus faecalis and Escherichia coli ESBL, sensitive to amoxicillin/clavulanic acid and levofloxacin.
- NPC: Negative cultures.
- (03/09/2024): Negative cultures.

Urinalysis Results:

- Pre-Canoxidin® urine pH: 6.
- Post-Canoxidin® urine pH: 7.

c. Diagnosis

Recurrent urinary infections in a patient with bilateral nephrostomy and vesical catheter due to a urethrorectal fistula.

d. Treatment

Antibiotic therapy and Canoxidin®.

e. Evolution and progress

From February 2024, when bilateral nephrostomy and vesical catheter placement occurred, until June 2024, the patient required three long-term hospital admissions due to infections caused by multidrug-resistant bacteria, requiring broad-spectrum and prolonged antibiotic therapy. Additionally, he visited the hospital emergency department four times for fever symptoms, with positive urine cultures requiring similar treatments. During admissions, mild calcification of urological catheters was noted.

In June 2024, Canoxidin® was introduced alongside a prophylactic antibiotic regimen. Since then, nephrostomy cultures remained negative, although vesical catheter cultures persisted positive, with significantly reduced infections and no further hospitalizations for this reason.

f. Clinical results

After several months of taking Canoxidin®, a reduced calcification of nephrostomy catheters and fewer urinary tract infections were observed.

4. Discussion

As this is a unique case, we cannot conclusively demonstrate that Canoxidin® was solely responsible for the prevention of UTIs. However, based on studies and experience at our center, it may have

contributed to reduced catheter calcification.

5. Conclusions and recommendations

Canoxidin® proved useful in preventing catheter calcification in our patient, thereby reducing the risk of secondary urinary infections.

6. Bibliographic references (* of special interest, ** of extraordinary interest)

- Devicare [Website]. Lit-control in urology: http://professional.devicare.com.
- EAU Guidelines. Edn. presented at the EAU Annual Congress Milan 2023. ISBN 978-94-92671-19-6.