

# Chronic prostatitis with recurrent extended-spectrum beta-lactamase–producing *Escherichia coli* bacteraemia treated with prolonged fosfomycin

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An 84-year-old man was admitted with his third episode over 4 months of extended-spectrum beta-lactamase (ESBL)–producing *Escherichia coli* bloodstream infection (BSI). He had hypertension, diabetes mellitus, benign prostatic hyperplasia, Parkinson’s disease, ischaemic heart disease, and severe aortic stenosis treated with transcatheter aortic valvular implantation. His most recent glycohaemoglobin level was 6.4% and he was on a

controlled diet. He was not on long-term steroids. His two initial infections (presenting only with fever) had each been managed with a 2-week course of intravenous carbapenem and consequent normalisation of inflammatory markers, white blood cell (WBC) count and bacterial clearance on blood culture. Repeated urine culture and liver biochemistry were unremarkable. Transthoracic echocardiogram showed no evidence of vegetation.

The patient was readmitted with a 1-day history of fever with blood culture showing ESBL-producing *E coli* (refer to the Table for antibiogram) characterised by leukocytosis (WBC count=20×10<sup>9</sup>/L). Systemic review revealed no localising signs or symptoms. We administered 14 days of intravenous meropenem with rapid defervescence and normalisation of WBC. As a deep-seated infection was suspected, whole-body gallium scan was performed and showed intense uptake over the prostate (Fig a). We decided to treat his chronic prostatitis with a prolonged regimen of oral fosfomycin (3 g daily for 1 week, then 3 g every 48 hours for 6 weeks). The patient tolerated fosfomycin without adverse effects (eg, diarrhoea) and remained free of reinfection 3 months after discharge; interval gallium scan showed almost complete resolution of uptake (Fig b).

TABLE. Antibiogram of blood culture with *Escherichia coli* of the patient

Antibiotics	<i>Escherichia coli</i>
Amikacin	S
Ampicillin	R
Ceftriaxone	R
Cefuroxime (oral)	R
Cefuroxime (parenteral)	R
Co-trimoxazole	R
Gentamicin	S
Levofloxacin	R
Meropenem	S
Extended-spectrum beta-lactamase	+

Abbreviations: + = present; R = resistant; S = sensitive

The primary site of ESBL-producing *E coli*

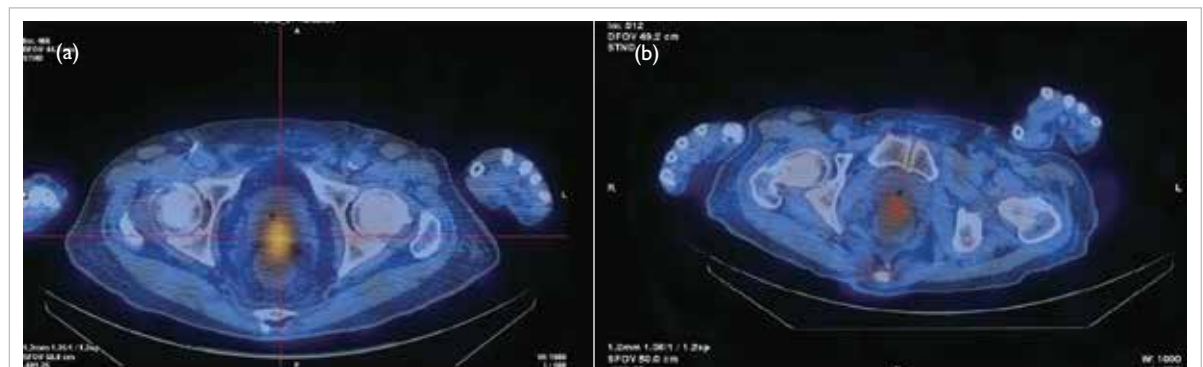


FIG. (a) Gallium scan of our patient showed focal intense tracer uptake within the prostate and together with the clinical history of recurrent extended-spectrum beta-lactamase producing–*Escherichia coli* bacteraemia is suggestive of chronic prostatitis. (b) Interval gallium scan 3 months later showed almost complete resolution of tracer uptake

BSI is predominantly the urinary tract, but may include intra-abdominal infections (eg, pyogenic liver abscess and psoas abscess).<sup>1</sup> Typical prostatitis is diagnosed by a 10-time higher bacterial load in expressed prostatic fluid or urine sample collected after prostatic massage than that in a urine sample without prostatic massage.<sup>1</sup> Our patient was asymptomatic with a negative urine culture; diagnosis was incidental on gallium scan, confirming its elusiveness. Once diagnosed, chronic prostatitis requires prolonged treatment for 4 to 6 weeks with an appropriate antibiotic.<sup>1</sup>

Extended-spectrum beta-lactamase-producing *E coli* arising from prostatitis has significant treatment implications. Few oral antibiotics can adequately penetrate the prostate to be clinically effective. They include fluoroquinolones, trimethoprim/sulfamethoxazole, and fosfomycin.<sup>2,3</sup> Fosfomycin has a high clinical success rate and avoids the cardiac and musculoskeletal toxicities traditionally associated with fluoroquinolones.<sup>2</sup> In our centre, it has a striking sensitivity of 97%.<sup>4</sup>

This report highlights three key points. First, chronic bacterial prostatitis should be considered in occult recurrent ESBL-producing *Enterobacteriaceae* BSI. Second, oral fosfomycin is an excellent choice for ESBL-producing *E coli*. Third, early stepdown from intravenous to oral antibiotics is effective in real life and validates historical retrospective studies.<sup>2,3</sup> Early outpatient management is a pragmatic approach that is especially important within the current context of the coronavirus disease 2019 pandemic where healthcare facilities have been often overwhelmed. Gallium scan or positron emission tomography should be considered for patients with occult infection to determine its origin.<sup>5</sup>

#### Author contributions

All authors contributed to the concept or design, acquisition of data, analysis or interpretation of data, drafting of the manuscript, and critical revision of the manuscript for important intellectual content.

All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

#### Conflicts of interest

All authors declared no conflicts of interest.

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#### Ethics approval

The patient was treated in accordance with the Declaration of Helsinki and provided informed consent for the treatment/procedures, and consent for publication.

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