

Case Report**A case report of fungemia due to *Kodamea ohmeri***

K Prabhu, TR Chinniah

*Sri Lankan Journal of Infectious Diseases 2021 Vol.11(1):42-46*DOI: <http://dx.doi.org/10.4038/sljid.v11i1.8334>**Abstract**

*Kodamea ohmeri* is an unusual and emerging fungal pathogen that can cause life threatening infections in humans, particularly in patients with compromised immunity. We report a case of *K. ohmeri* fungemia leading to sepsis that was successfully treated with amphotericin B therapy.

**Keywords:** *Kodamea ohmeri*, fungemia, amphotericin B

**Introduction**

*Kodamea ohmeri* is an unusual, emerging pathogen of clinical importance. It is a yeast like fungus, frequently misidentified as *Candida* as they both belong to the same family.<sup>1,2</sup> Recent studies have shown that this micro-organism can cause life-threatening infections in humans, usually in patients with significant predisposing factors such as diabetes, malignancy, post-chemotherapy neutropenia, immunosuppressive treatments, chronic renal failure and use of indwelling catheters.<sup>2,3,4</sup> Here, we report a case of *K. ohmeri* fungemia leading to sepsis. To our knowledge this is the first case of *K. ohmeri* sepsis reported from Brunei Darussalam.

**Case report**

A 47-year-old man, with known uncontrolled type II diabetes mellitus and epilepsy was admitted to hospital for an abscess on his back. The duration of the abscess was unknown as the patient was unable to give a proper history due to his clinical condition and because he lived alone with no immediate caretaker. On the third day of his admission, incision and drainage of the abscess was done and the patient was transferred to the intensive care unit (ICU) under cefuroxime and gentamicin cover for post-operative management of uncontrolled diabetes with sepsis. Pus from the abscess grew methicillin sensitive *Staphylococcus aureus* (MSSA) and *Streptococcus*

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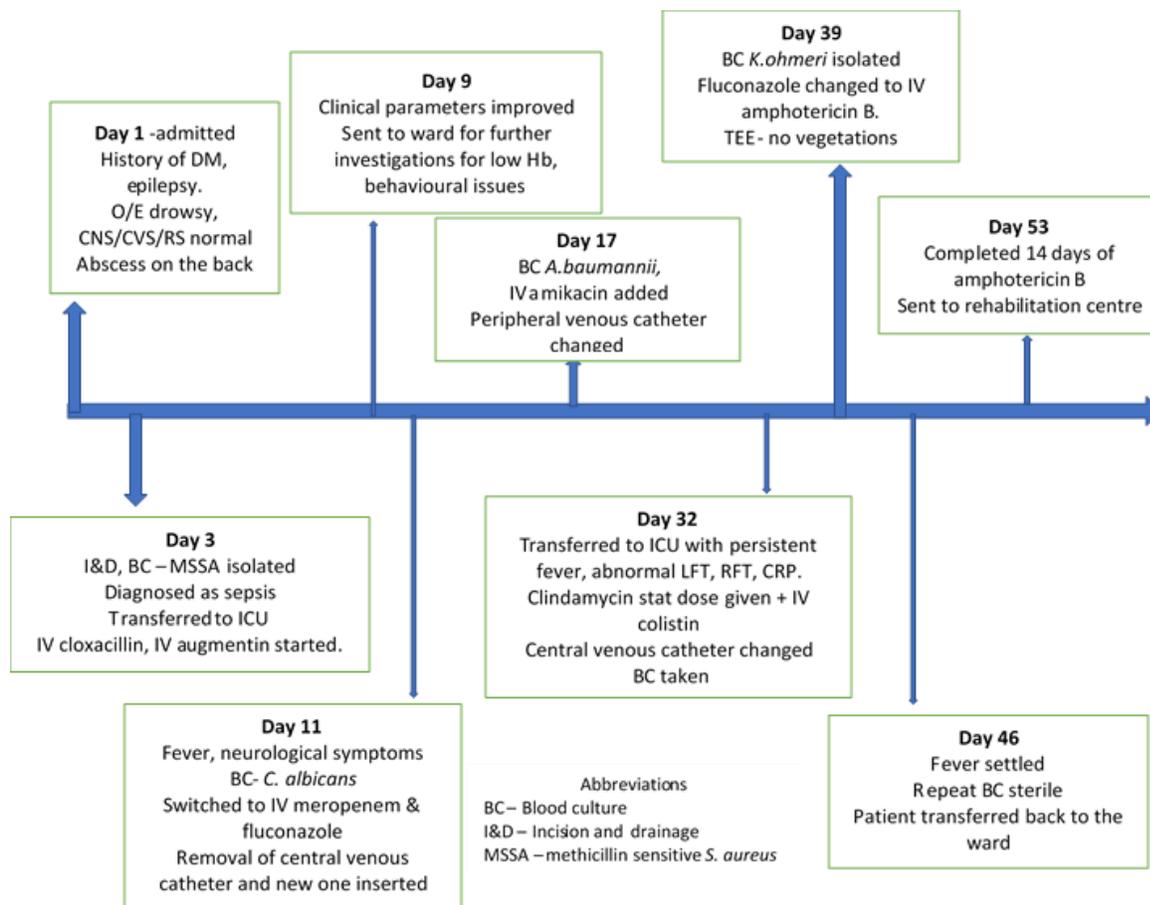
*agalactiae* and the blood culture taken on the second day of admission grew MSSA. His antibiotics were changed to cloxacillin and augmentin following the culture results. After six days of ICU management, the patient was transferred to the ward for further management which included investigation of his low hemoglobin level (6.4gm/dl) and his learning disabilities, which included difficulties in understanding and following a daily work routine and which led to aggressive behavior.

Two days later, (post admission day 11), the patient developed a swinging fever, partial reduction of movement in his left arm, and upgoing left plantar reflex. The patient's antibiotic therapy was escalated to meropenem. His blood cultures from his peripheral vein and a central venous line taken on the day of fever spike, grew *Candida albicans*. As a result, the central venous catheter was replaced with a new one, and he was started on fluconazole 200mg OD after the loading dose. Magnetic resonance imaging ruled out spinal pathologies, namely spinal / epidural abscess. CT brain and neck scans showed that he had a right internal jugular artery occlusion, and an infarct in his left parietal lobe. A CT chest showed a cavity in his right lung. One week later (post admission day 17), repeat blood cultures from a peripheral venous cannula and peripheral vein grew multidrug resistant *Acinetobacter baumannii*. Following this, the peripheral venous catheter was removed and a new one inserted, and amikacin was added to the patient's antibiotic regime.

As the patient continued to have persistent low-grade fever with deranged liver function test results, worsening renal function, and a high C reactive protein level (17.68mg/dl), he was transferred to the ICU on post admission day 32. He was given a stat dose of intravenous clindamycin, started on intravenous colistin, and a new central venous catheter was inserted. Four sets of blood cultures were taken two days apart. Three of the four sets of blood cultures were positive. A yeast was isolated from the BacT/ALERT Microbial Detection System (bioMérieux SA, Marcy-l'Etoile, France) aerobic blood culture bottles. Subculture showed moist creamy colonies on blood agar and white fluffy colonies on Sabouraud Dextrose Agar (SDA) after 24 hours of incubation at 37 °C. Gram stain of the colony showed yeast cells. The isolate was identified as *Kodamea ohmeri* by Vitek 2 ID YST system (BioMérieux SA) and Matrix Assisted Laser Desorption Ionization Time-of-Flight (MALDI-TOF) (Vitek MS, BioMérieux SA). Antifungal sensitivity was done by Vitek 2 YS07 card (BioMérieux SA). Minimum Inhibitory Concentration (MIC) for antifungals were as follows: fluconazole (4µg/dl), voriconazole (0.12µg/dl), amphotericin B (0.25µg/dl), caspofungin (0.25µg/dl), micafungin (0.12µg/dl), flucytosine (1µg/dl). The reference method for broth dilution antifungal susceptibility testing of yeasts (CLSI 2012) was used to interpret the antifungal susceptibility results.<sup>5</sup>

The patient's antifungal therapy was changed to liposomal amphotericin B (3mg/kg/day). There were no vegetations on transesophageal echocardiography. His fever settled after one week of amphotericin B therapy. Blood cultures repeated one week after starting liposomal amphotericin B were sterile. As the patient was clinically stable, he was transferred back to the ward for rehabilitation under neurology after nine days of ICU care. Amphotericin B therapy was given for 14 days.

## Timeline of illness



## Discussion

The patient went into sepsis due *K. ohmeri* fungemia. The patient showed signs of recovery after administration of amphotericin B and a change of the central venous catheter.

*K. ohmeri*, previously known as *Pichia ohmeri* and *Yamadazyma ohmeri*, is an asosporegenous yeast, and a telemorph of *Candida guilliermondii* var. *membranaefaciens*.<sup>6</sup> The genus *Kodamaea* has five species and only *K. ohmeri* shows pathogenicity in humans.<sup>6</sup>

*K. ohmeri* has been isolated from environmental sources such as sand, pools, sea water and fruits.<sup>2</sup> The first case of human infection was reported in 1998, and the pathogen, isolated from pleural fluid, was considered a contaminant.<sup>7</sup> Since then, more infections with this yeast have been reported considering it a true clinical pathogen, especially in patients with underlying immunosuppression.<sup>8</sup> *K. ohmeri* can cause fungemia, infective endocarditis, cellulitis, onychomycosis, funguria and peritonitis in neonates and children, immunocompromised adults

and less frequently in immunocompetent adults.<sup>2,3,9</sup> Previous antibiotic use, presence of a central venous catheter, parenteral nutrition, chronic renal failure, and cancer were very common among patients. Mortality was high in the case of fungemia but low for other types of infections.<sup>2,8,9</sup>

This patient had diabetes, was on a broad-spectrum of antibiotics, and had a central venous catheter. He could have been infected by *K. ohmeri* through the indwelling central venous catheter, which led to sepsis.

On solid media, *K. ohmeri* forms *Candida* like colonies. Although the Vitek 2 ID-YST system is used to correctly identify *K. ohmeri*, some other species of *Candida* (*C. haemoluni*) can be mistakenly identified as *K. ohmeri*.<sup>10,11</sup> A study by Zhou M et al stated that the Vitek MS system can correctly identify *K.ohmeri* with 99.9% confidence.<sup>11</sup> Molecular diagnosis is the most reliable method for the correct identification of this yeast, but is only available in research laboratories.<sup>10</sup>

In this patient, the organism was identified as *K. ohmeri* by both Vitek 2 ID- YST and Vitek MS system. Antifungal susceptibility done by Vitek 2 showed that this isolate was susceptible-dose dependent (SDD category; CLSI) to fluconazole<sup>5</sup>, susceptible to caspofungin and amphotericin B. Treatment of the patient with amphotericin B had a positive clinical response.

Although there is insufficient data to support a firm treatment recommendation, amphotericin B appears to be an attractive first-line agent and echinocandins are possible alternative candidates. Susceptibility testing is recommended not only to guide treatment but also to provide MIC–outcome relationships and hence data for future optimized treatment recommendations.<sup>12</sup>

## Conclusion

*K. ohmeri* is an emerging human pathogen with high mortality and resistance to fluconazole, which is a commonly used antifungal agent in clinical practice. Therefore, accurate identification of *K. ohmeri* isolates and anti-fungal susceptibility tests to detect MIC values in the clinical microbiology laboratory are vital.

**Conflict of interest:** None

**Ethics statement & consent for publication:** Verbal consent was taken from the caretaker (patient's sister)

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