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Kodamaea Ohmeri: An Emerging Opportunistic Yeast - A Case Series from Northeast India

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ABSTRACT

Introduction

Kodamaea ohmeri, formerly classified under the genera Pichia and Yamadazyma, is an uncommon ascomycetous yeast belonging to the family Saccharomycetaceae [1,2]. It represents the teleomorphic form of Candida guilliermondii var. membranaefaciens and has traditionally been utilized in the food industry for the fermentation of fruits, pickles, and rinds [3]. The genus *Kodamaea* currently comprises five recognized species (*K. anthrophila, K. kakaduensis*, *K. laetipori*, *K. nitidulidarum*, and *K. ohmeri*), among which only *K. ohmeri* has been associated with human pathogenicity [4]. *K. ohmeri* has emerged in recent years as an opportunistic fungal pathogen, particularly in immunocompromised hosts [4,5]. Since the initial description of *K. ohmeri*–associated sepsis, reports of invasive fungal disease due to this organism have steadily increased. Documented presentations include bloodstream infection, catheter-associated fungemia, peritonitis, and infective endocarditis. Notably, several hospital-based outbreaks—particularly within neonatal and paediatric intensive care settings—have highlighted its capacity for nosocomial transmission and its association with substantial mortality [6–12].

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INTRODUCTION

Kodamaea ohmeri, formerly classified under the genera Pichia and Yamadazyma, is an uncommon ascomycetous yeast belonging to the family Saccharomycetaceae [1,2]. It represents the teleomorphic form of Candida guilliermondii var. membranaefaciens and has traditionally been utilized in the food industry for the fermentation of fruits, pickles, and rinds [3]. The genus *Kodamaea* currently comprises five recognized species (*K. anthrophila, K. kakaduensis, K. laetipori, K. nitidulidarum,* and *K. ohmeri*), among which only *K. ohmeri* has been associated with human pathogenicity [4]. *K. ohmeri* has emerged in recent years as an opportunistic fungal pathogen, particularly in immunocompromised hosts [4,5]. Since the initial description of *K. ohmeri*–associated sepsis, reports of invasive fungal disease due to this organism have steadily increased. Documented presentations include bloodstream infection, catheter-associated fungemia, peritonitis, and infective endocarditis. Notably, several hospital-based outbreaks—particularly within neonatal and paediatric intensive care settings—have highlighted its capacity for nosocomial transmission and its association with substantial mortality [6–12]. Neonatal infections due to *K. ohmeri* remain exceedingly uncommon, with most reported cases occurring in premature or critically ill neonates, often with poor outcomes [13,14]. However, to date, no published data exist on *K. ohmeri* infections from Manipur or the broader Northeast region of India, despite increasing recognition of invasive fungal infections in neonatal intensive care settings. In this case series, we describe 15 cases of *Kodamaea ohmeri* isolated from neonates admitted to a tertiary care hospital in Northeast India.

Description of the Case Series

A total of 15 neonatal cases were included in this series, all of which yielded *Kodamaea ohmeri* on culture and were confirmed by MALDI-TOF. The affected neonates were predominantly male (12/15; 80%), with ages ranging from 3 to 23 days. Most cases were preterm (11/15; 73.3%), and cesarean section (CS) was the commonest mode of delivery (14/15; 93.3%), with only one neonate delivered vaginally. The majority of cases were admitted to the Neonatal Intensive Care Unit (NICU) (7/15; 46.7%), followed by the Pediatric Intensive Care Unit (PICU) (3/15; 20%), and the general paediatric ward (4/15; 26.7%). One neonate was admitted to the Special Newborn Care Unit (SNCU). The primary diagnosis in almost all cases was neonatal sepsis, except for one case with birth asphyxia. Antifungal susceptibility testing (AFST) demonstrated sensitivity to fluconazole, voriconazole, caspofungin, micafungin, amphotericin B, and flucytosine. All patients were treated with amphotericin B for 21 days, showing uniform management across cases. The distribution of cases by month showed clustering in September (6 cases), followed by June (2 cases) and July (2 cases), while isolated cases were observed in February, March, May, and October. Detail descriptions of the cases are depicted in ***Table 1***.

Table 1: Detail description of cases

Case No	Age (In Days)	Gender	Place O Admission	Term/Preterm	Mode Of Delivery	Diagnosis	Month Of Year
1	15	Male	NICU	Preterm	CS	Neonatal Sepsis	February
2	11	Male	NICU	Preterm	CS	Neonatal Sepsis	February
3	6	Male	NICU	Preterm	CS	Neonatal Sepsis	May
4	7	Male	NICU	Preterm	CS	Birth Asphyxia	June
5	15	Male	NICU	Term	CS	Neonatal Sepsis	June
6	4	Female	WARD	Preterm	CS	Neonatal	July

						Sepsis	
7	22	Female	WARD	Term	NVD	Neonatal Sepsis	July
8	20	Female	WARD	Term	CS	Neonatal Sepsis	September
9	19	Male	SNCU	Term	CS	Neonatal Sepsis	September
10	3	Male	WARD	Preterm	CS	Neonatal Sepsis	September
11	23	Male	PICU	Preterm	CS	Neonatal Sepsis	September
12	10	Male	PICU	Preterm	CS	Neonatal Sepsis	September
13	15	Male	NICU	Preterm	CS	Neonatal Sepsis	September
14	14	Male	PICU	Preterm	CS	Neonatal Sepsis	October
15	4	Male	NICU	Preterm	CS	Neonatal Sepsis	March

NICU– Neonatal Intensive Care Unit, SNCU – Special Newborn Care Unit, PICU – Paediatric Intensive Care Unit, CS – Caesarean Section, NVD – Normal Vaginal Delivery

Figure 1 demonstrates gram-positive, oval budding yeast cells measuring approximately 7–8 µm on Gram staining.

Figure 2 shows growth on Sabouraud dextrose agar, characterized by pinhead-sized, white to creamy, butyrous colonies with irregular margins. Figure 3 depicts growth on blood agar with pinhead-sized, white, circular, opaque, dry, non-haemolytic colonies.

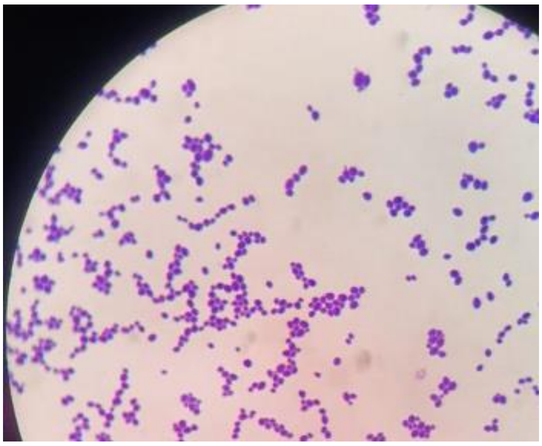

Figure 1: Gram stating showing Gram positive budding yeast cells (7-8 µm in size)

Figure2: Colonies on SDA-Pinhead, white, creamy, butyrous with irregular margins

Figure 3: Colonies on Blood agar- Pinhead, white, circular, opaque, dry, non-haemolytic colonies

DISCUSSION

The epidemiology of invasive fungal infections has evolved considerably, with previously uncommon yeasts emerging as clinically significant pathogens and established species exhibiting increasing virulence and antifungal resistance. *Kodamaea ohmeri* represents one such emerging organism [15]. Recent reports from India have drawn attention to its capacity to cause severe disease, including fatal outcomes when diagnosis and treatment are delayed [16,17].This case series from Northeast India adds important regional evidence by documenting 15 neonatal infections, highlighting the growing relevance of *K. ohmeri* in intensive care settings where fungal disease remains a major cause of morbidity and mortality. The predominance of preterm infants and births by caesarean section mirrors recognised risk factors for neonatal fungal infections, including physiological immune immaturity and frequent exposure to invasive procedures. The clustering of cases within the NICU and PICU further illustrates the susceptibility of critically ill neonates and supports concerns about potential nosocomial transmission, in line with previous outbreak reports. Although prematurity is often implicated as a major predisposition, the occurrence of infection in a term neonate within this series underscores that susceptibility is not restricted to preterm infants [11,13,16,18]. The clinical presentation was dominated by neonatal sepsis, a nonspecific syndrome that complicates early recognition of fungal aetiology. Use of MALDI-TOF mass spectrometry for species-level identification was critical, as *K. ohmeri* may be misidentified with traditional biochemical methods, potentially delaying targeted therapy [5,19]. This reinforces the value of advanced diagnostics in settings where rare or emerging yeasts may be encountered. Antifungal susceptibility testing demonstrated consistent sensitivity to amphotericin B, azoles, and echinocandins. Management with amphotericin B for 21 days resulted in favourable outcomes across cases, supporting its use as a first-line agent in neonatal *K. ohmeri* infections. Nonetheless, susceptibility testing remains important because reduced azole susceptibility has been reported in other settings [8,19]. To our knowledge, this is the first report of neonatal *K. ohmeri* infections from Manipur and the broader Northeast region of India, helping to fill an important gap in regional epidemiological data. These findings highlight the need for prompt clinical recognition, accurate laboratory diagnosis, and timely initiation of effective antifungal therapy. Overall, *K. ohmeri* should be considered an emerging neonatal pathogen in this setting. Strengthening awareness among clinicians and microbiologists, alongside ensuring reliable diagnostic support and standardized treatment strategies, will be essential for improving outcomes and limiting the impact of this uncommon but clinically significant yeast.

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