Hypermucoviscous Klebsiella: Rare Source of Severe Head and Neck Infections

Arifeen Rahman, MD[1]; Caroline Worthington, BA[1]; Katherine C. Wai, MD[2]; Nancy Fischbein, MD[1], John Sunwoo[1], MD; Tai Zhang, DMSc, PA-C[4]; Elizabeth A. Borowiec, MD[3]; Lucio M. Pereira, MD[4], Michael B. Montalbaron, MD[3]

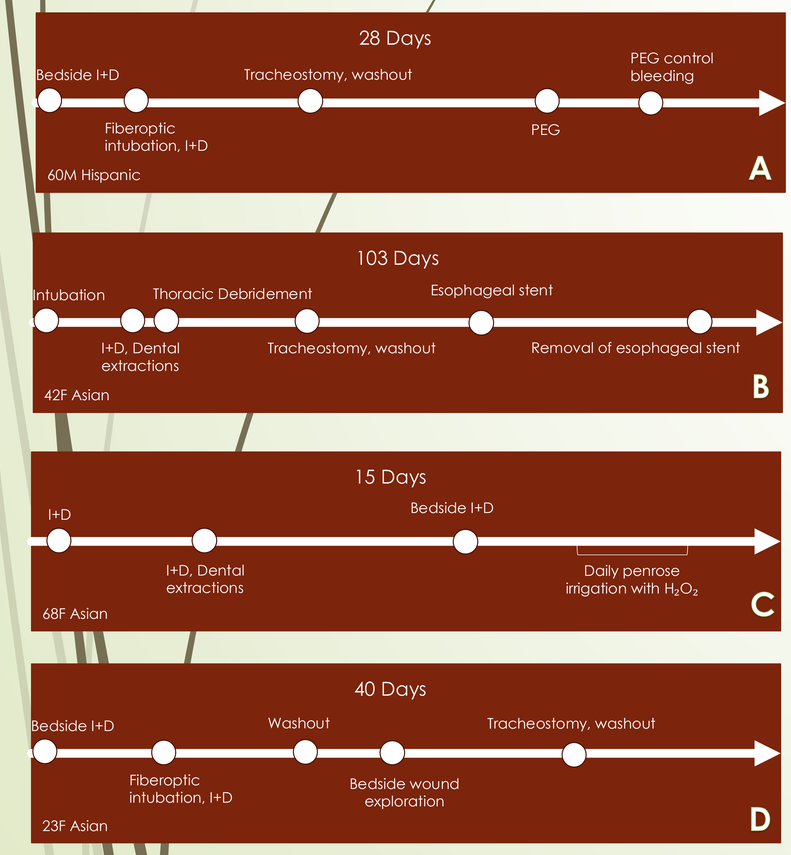
[1]Stanford University, Palo Alto, CA [2]University of California, San Francisco, San Fracisco, CA [3]Albert Einstein College of Medicine, Bronx, NY [4]Northwell Health, New Hyde Park, NY

Background

Hypermucoviscous Klebsiella pneumoniae emerged in East Asia in the 1980s and classically presents with liver abscess. This uncommon phenotype can be diagnosed with a positive string test. While single case reports of head and neck infection with this organism have been reported, no larger series has described these patients.

Case Series

We report four cases of deep cervicofacial infections at two institutions in the United States caused by Hypermucoviscous Klebsiella (HmKp), most occurring in the setting of recent dental manipulation. All patients presented with neck swelling, odynophagia, and systemic signs of infection. Initial CT imaging underestimated disease extent in three of four cases, necessitating repeat imaging and serial surgical drainage. All cultures grew HmKp, in three cases alongside other organisms. Management required prolonged intravenous antibiotics, with ceftriaxone or ertapenem used in all four cases. Three patients required tracheostomy; one developed esophageal erosion requiring stenting.



Methods and Materials

An observational review of cases from two tertiary care centers and scoping review was performed. Electronic medical records of four patients with Hypermucoviscous (a.k.a. Hypermucoid) Klebsiella neck abscesses were reviewed. MEDLINE search of "Hypermucoid" and "Hypermucoviscous" Klebsiella was reviewed for cases to determine year, age, race, comorbidity, presentation of disease, complications, antibiotic sensitivity, bacteria phenotype, and treatment course.

Author	Year	Age	Race	Presentation	Complications	Sensitivities	String Test	Phenotype	Abx	Comorbidity
McHardy	2021	53	--	Sepsis with Neck Abscess	None	Pansensitive except Amoxicillin	--	K20, rmpA, rmpA2	CTX, Flagyl, Augmentin	T2DM, Hx Pulmonary TB
Sun	2020	58	Pacific Islander Tonga	Neck Abscess. Thrombophlebitis	Readmission with abscess and IJV thrombus	Pansensitive except Ampicillin	+	--	Zosyn	T2DM, ESRD on HD, Hx Latent TB
Frazee	2009	59	Asian Phillipines	Neck Abscess, DKA	Hypoxic respiratory failure with intubation	Pansensitive except Ampicillin	+	--	Clindamycin, Vancomycin, TMP-SMX	T2DM, HTN
Dambly	2024	40s	Asian Vietnam	Neck abscess, calf necrotizing fasciitis	--	Pansensitive except TMP-SMX	+	--	Zosyn, Unasyn, Vancomycin, Cefepime, Levofloxacin	T2DM
Mizobata	2024	60	Asian Japan	Peritonsillar abscess	--	Pansensitive	+	K2, rmpA	Unasyn	Prediabetes
Lan	2021	74	--	Neck abscess	--	Pansensitive except Ampicillin	+	rmpA	--	T2DM, cirrhosis
Lee	2021	63	--	Neck abscess, Lemierre's	--	--	+	--	Meropenem, Unasyn	T2DM, HTN, HLD
Ng and Frazee	2014	71	Asian Phillipines	Neck abscess, Necrotizing fasciitis	Death	Pansensitive except Ampicillin	+	--	--	None
Ukai	2025	--	Asian Japan	Masticator space	Hypoxic respiratory failure, hypotension, Death	Resistant to Cephalosporins, Bactrim, Unasyn, Zosyn	+	rmpA2	Meropenem	CKD, T2DM





A) Figure from Ukai, et. al. 2024 demonstrating positive string test from agar plate for Hypermucoviscous Klebsiella **B)** CT imaging from from patient B demonstrating lack of clear rim enhancement

Results

Our four patients with Hypermucoviscous Klebsiella deep neck abscesses had histories notable for diabetes and dental manipulation. Initial imaging tended to underestimate the tenacious nature of the infection, necessitating serial imaging and serial surgical drainages and washouts. Hypermucoid variant was confirmed with positive string test. Three patients required tracheostomy and one esophageal perforation requiring stenting, but all survived. Ceftriaxone or ertapenem was used during the treatment of all patients. Multidisciplinary team management with infectious disease, and in once case thoracic surgery, was required. Mean inpatient length of stay was 46.5 days.

Of 360 results from the MEDLINE search, nine reported head and neck manifestations. Diabetes, kidney disease, and Asian race were common factors. Although most strains were pansensitive to all antibiotics except Ampicillin, treatment required prolonged antibiotic course. 44% expressed rmpA transcription factor promoting capsule production. Severe infections resulted in intubation, tracheostomy, and death.

Conclusions

A rare and unusually aggressive infection usually seen in Asian patients and diabetics, Hypermucoid Klebsiella deep neck abscesses require prolonged antimicrobial treatment, close monitoring for airway compromise, serial imaging, and repeat debridements.

Contact

Arifeen Rahman, MD arifeenr@stanford.edu

Department of Otolaryngology, School of Medicine
Stanford University
801 Welch Road, Palo Alto, CA

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