COMPARATIVE GENOMIC AND MOLECULAR CHARACTERISATION OF HYPERVIRULENT (hvKp) AND CLASSICAL KLEBSIELLA PNEUMONIAE (cKp) FROM CLINICAL ISOLATES

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RES-308

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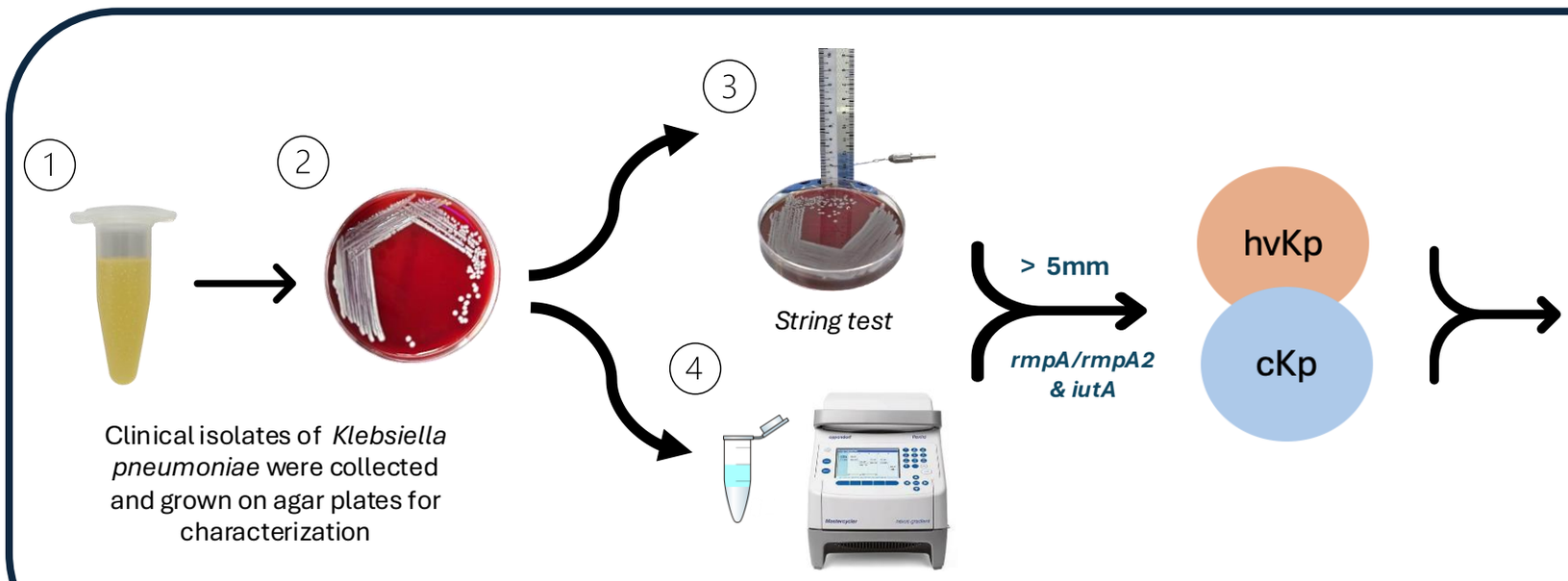
INTRODUCTION

Klebsiella pneumoniae is a clinically significant pathogen in both healthcare and community settings. These species have evolved, acquiring resistance and virulence, enhancing their pathogenicity. Hypervirulent *K. pneumoniae* (hvKp) is recognised as a distinct strain associated with severe and invasive infections. Compared to classical *K. pneumoniae* (cKp), hvKp is often identified by elevated expression of virulence markers

OBJECTIVES

This study aims to comparatively analyze the virulence of hvKp and cKp via molecular genomic approaches

METHODOLOGY



FINDINGS

- Among 241 isolates collected, 60 (25%) were identified as hvKp and 181 (75%) were cKp
- HvKp was predominantly isolated from blood and associated with bloodstream infections
- CKp was mainly isolated from urine and linked to other infections
- Both strains were **susceptible** to most antibiotics, though cephalosporin resistance was observed

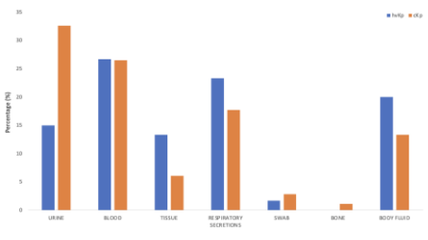


Figure 1. Specimen type

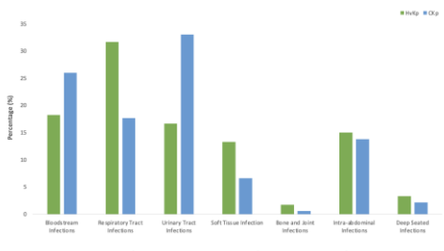


Figure 2. Diagnosis

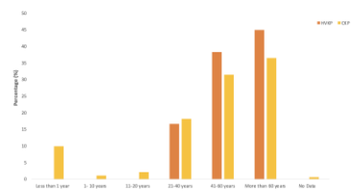


Figure 3. Age group

- HvKp demonstrated higher expression of virulence markers, including ***rmpA2***, ***iutA***, and ***wcaG***, in comparison to cKp
- HvKp was also confined to K1 and K2 serotypes, whereas cKp displayed a diverse serotype distribution, including K5 and K54

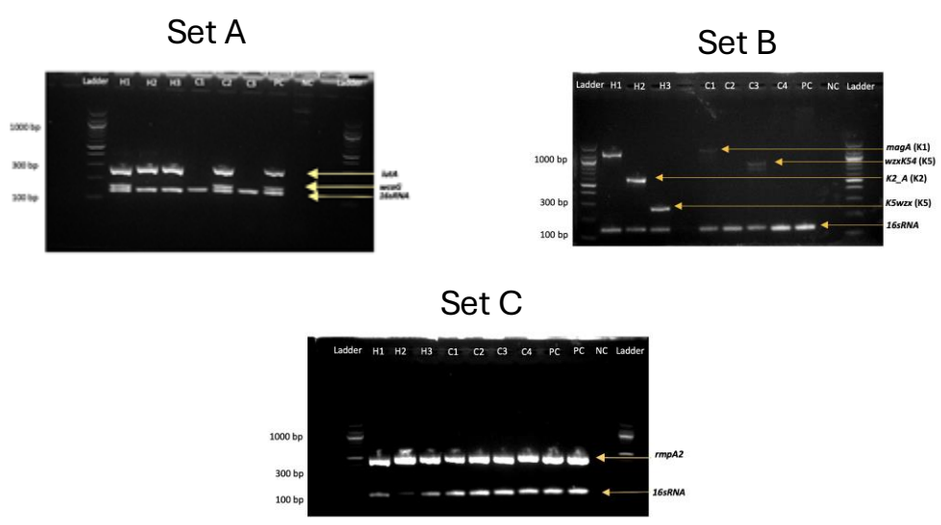


Figure 4, 5, 6. Amplicons on 1.7% agarose gel

CONCLUSION

HvKp expressed higher virulence markers than cKp and is predominantly isolated from bloodstream infections, posing a serious clinical concern. Bacterial phenotypic and genotypic identification are critical for effective patient care and management. Continuous surveillance is crucial to monitor the emergence and spread of hvKp

References: 1) Paczosa, M. K., & Mecsas, J. (2016). Klebsiella pneumoniae: Going on the Offense with a Strong Defense. *Microbiology and molecular biology reviews : MMBR*, *80*(3), 629–661 2) Liu, C., & Guo, J. (2019). Hypervirulent Klebsiella pneumoniae (hypermucoviscous and aerobactin positive) infection over 6 years in the elderly in China: Antimicrobial resistance patterns, molecular epidemiology and risk factor. *Annals of Clinical Microbiology and Antimicrobials*, *18*(1). 3) Li, L., Yuan, Z., Chen, D., Xie, X., & Zhang, B. (2020). Clinical and Microbiological Characteristics of Invasive and Hypervirulent *Klebsiella pneumoniae* Infections in a Teaching Hospital in China. *Infection and drug resistance*, *13*, 4395–4403