Hypervirulent *Klebsiella pneumoniae*: the next plague?

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Hypervirulent *Klebsiella pneumoniae* (hvKp) is an evolving pathotype that is more virulent than classical *K. pneumoniae* (cKp). hvKp infection has the ability to cause tissue invasive infection in otherwise healthy individuals from the community. It frequently presents with multiple sites of infection or can subsequently spread, often requiring source control (e.g. abscesses, necrotizing fasciitis). hvKp has an increased ability to cause central nervous system infection and endophthalmitis compared to cKp and other Enterobacteriaceae, which requires rapid recognition and site-specific treatment for optimal outcomes. Similar to cKp, hvKp strains are becoming increasingly resistant to antimicrobials via acquisition of conjugal plasmids carrying resistance determinants or by extensively drug resistant (XDR) cKp strains acquiring hvKp virulence determinants. Needless to say, the confluence of hypervirulence and acquisition of extensive or pan-antimicrobial resistance has resulted in the creation of the ultimate “super-bug” for which limited to no therapeutic options exist.

This talk will discuss clinical and epidemiologic features that characterize hvKp. Data from our group will be presented on an assessment of biomarkers for the differentiation of hvKp from cKp, a test sorely needed by both clinicians and researchers. In order to develop strategies for counter measures directed against hvKp an increased understanding of the genetic elements and pathogenic mechanisms that significantly enhance its virulence relative to cKp is needed. Insights we have generated on factors and mechanisms that confer hvKp’s hypervirulent phenotype will be presented. However, many critical knowledge gaps remain that present ample opportunities for ongoing research on this concerning pathogen.