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Comparison of antimicrobial resistance and multilocus sequence types between methicillin-resistant *Staphylococcus pseudintermedius* and methicillin-susceptible *Staphylococcus pseudintermedius* isolated from dogs in veterinary hospitals in Korea

Chan-Hee Lee, Chung-Ung Kim, Jae-Hee Kim, Young-Kyung Park, Suk Shin, Kun-Taek Park and Yong-Ho Park
Seoul National University, Republic of Korea

Statement of the Problem: Methicillin-Resistant *S. Pseudintermedius* (MRSP) has emerged as a serious threat to canine health in veterinary medicine. In this study, we investigated the prevalence, antimicrobial resistance profile and clonal distribution of MRSP isolated from dogs in Korea.

Methodology & Theoretical Orientation: A total of 59 *S. pseudintermedius* were isolated from dogs at three local and two veterinary teaching hospitals in Korea in 2012 (n=41) and 2016 (n=18). Antimicrobial susceptibility tests were performed by disk tests against 18 antimicrobial agents (14 different classes). Clonal relatedness of MRSP was analyzed by Multilocus sequence typing (MLST) of seven genes (*ack*, *cpn160*, *fdh*, *pta*, *purA*, *sar*, *turf*).

Findings: 29 isolates (49.15%) were identified as MRSP. Antimicrobial susceptibility tests revealed that all MRSP were multidrug resistant *S. pseudintermedius* showing resistance to three or more than three different classes of antimicrobials. All MRSP were resistant to penicillin, oxacillin, cefotaxime and trimethoprim-sulfamethoxazole but susceptible to vancomycin, amikacin and rifampin. Out of 29 MRSP isolates typed with MLST, 33 distinct Sequence Types (STs) were identified: ST585 (n=7), ST365 (n=5), ST568 (n=1), ST690 (n=1) and 28 new STs (designated nST1 to nST28). Interestingly, no predominant ST was found. All ST585 isolates were collected from a same university teaching hospital in 2012. However, ST362 were isolated from different places in different years (3 isolates in 2012 and 2 isolates in 2016).

Conclusion & Significance: Unlike in North America and Europe, there was considerable clonal diversity among MRSP. The prevalence of MRSP had significantly increased in the past 5 years in Korea from 17.6% to 49.15%. Due to multidrug resistant characteristics of MRSP, it is currently considered as a major threat to pet animal health. Therefore, more prudent use of antimicrobials in veterinary medicine is required to reduce the emergence and spread of MRSP in Korea

Biography

Chan-Hee Lee has his interest in clonal spread of antimicrobial resistance gene and prevalence of antimicrobial resistance rates in *Staphylococcus pseudintermedius* in companion animals and also respiratory disease in pneumonic lesions in swine and bovine. He has investigated the clonal distribution of MRSP in his research in animal hospitals and pathogenic bacteria in porcine and bovine respiratory disease in lung tissues in slaughter houses.

0927chlee@snu.ac.kr

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