عنوان مقاله:

Evaluation of Antimicrobial Resistance and Immune Evasion Cluster Genes in Clinical Methicillin-Resistant Staphylococcus aureus (MRSA) Isolates from Khuzestan Province, Iran

نویسندگان:

s Ariyarad - *Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran*

s.e Rezatofighi - *Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran*
Biotechnology and Biological Science Research Center, Shahid Chamran University of Ahvaz, Ahvaz, Iran

h motamedi - *Department of Biology, Faculty of Science, Shahid Chamran University of Ahvaz, Ahvaz, Iran*
Biotechnology and Biological Science Research Center, Shahid Chamran University of Ahvaz, Ahvaz, Iran

خلاصه مقاله:

Aims: Methicillin-resistant Staphylococcus aureus (MRSA) is recognized as an important health problem worldwide. To counteract the human innate immunity, S. aureus produces a number of immune evasion clusters (IEC) including staphylokinase (SAK), staphylococcal enterotoxin P (SEP), staphylococcal enterotoxin A (SEA), staphylococcal complement inhibitor (SCIN), and chemotaxis inhibitory protein (CHIP), encoded by sak, sep, sea, scn, and chp genes, respectively. These genes are carried by β-haemolysin-converting bacteriophages. The present study was conducted to determine the IEC phage types and antibiotic resistance patterns in 145 clinical MRSA isolates from Khuzestan Province, Iran. Materials & Methods: All the isolates were investigated by disc diffusion method and PCR assay for sak, sep, sea, scn, and chp genes.Findings: The assessment of antibiotic resistance showed the highest resistance rate towards penicillin (97.25%), followed by methicillin (95.8%), ceftazidime (81.4%), erythromycin (71.8%), clindamycin (61.4%), ciprofloxacin (60.7%), gentamycin (56%), imipenem (56.55%), and vancomycin (0%), respectively. Also, the frequency of IEC types was as follows: Type A, 4.8%; Type B, 9%; Type C, 13.1%; Type D, 12.4%; Type E, 27.6%; Type F, 1.4%; Type G, 0.7%; and Type H, 6.9%. On the other hand, 24.1% of the isolates showed no IEC type. Conclusion: The findings showed that IEC-carrying bacteriophages were highly prevalent among the MRSA strains, resulting in the adaptation and counteraction of bacteria with the human immune system. Therefore, understanding the role of IEC in bacteria virulence can improve our knowledge about the evolution, vaccination, and treatment of S. aureus infection.

کلمات کلیدی:

Immune evasion cluster; Methicillin-resistant Staphylococcus aureus; Phage typing; Antibiotic resistance

لینک ثابت مقاله در پایگاه سیویلیکا:

https://civilica.com/doc/992048