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## Vancomycin resistance in *Enterococcus* & *Staphylococcus* and strategies for treatment & prevention

Suleiman Al-Obeid

Security Forces Hospital, Saudi Arabia

VISA was first identified in Japan in 1996, it is also termed GISA (Glycopeptides-intermediate *Staphylococcus aureus*), and these bacterial strains present a thickening of the cell wall, which is believed to reduce the ability of vancomycin to reach their site of action on the level of cytoplasmic membrane D-ala-D-ala. In the *Staphylococcus aureus*, high level of vancomycin resistance has been rarely reported. *In-vivo* and *in vitro* experiments carried out in the year 1992 showed that from *Enterococcus faecalis*, the vancomycin resistance genes could be transferred by gene transfer to *Staphylococcus aureus*, granting high level vancomycin resistance to *S. aureus*. In the year 2002, a VRSA strain was mainly isolated from a patient in Michigan. The definition of hVISA according to Hiramatsu et al. is a strain of *Staphylococcus aureus* that gives resistance to vancomycin at a frequency of 10<sup>-6</sup> colonies or even higher. Strains of hVISA and VISA do not have resistant genes found in *Enterococcus* and the proposed mechanisms of resistance include the sequential mutations resulting in a thicker cell wall and the synthesis of excess amounts of D-ala-D-ala residues. VRSA strain acquired the vancomycin resistance gene cluster vanA from VRE. An alternative to Vancomycin should be used, specifically for isolates with a Vancomycin MIC > 2 mcg/mL. The method is to treat with at least one agent to which VRSA/ VISA is supposed to be susceptible by *in vitro* lab testing. The agents that are used include linezolid, daptomycin, Ceftaroline, Telavancin, quinupristin-dalfopristin. Use of appropriate infection control practices (such as wearing gloves before and after contact with infectious body substances and adherence to hand hygiene) by healthcare personnel can reduce the spread of VISA and VRSA. Treatment failure under therapeutic levels of vancomycin prompted us to investigate the resistance profile of hVISA D958 strain isolated from blood culture at SFH in KSA.

### Biography

Suleiman Al-Obeid, MD, PhD, completed his residency in Internal Medicine at Damascus University School of Medicine in Syria and Paris 6 university in France. Dr. Al-Obeid did his Clinical and microbiological research on the mechanism of bacterial resistance in the molecular Research laboratory at Paris 6 university Department of Microbiology, School of Medicine. Dr. Al-Obeid was Assistant Professor at Damascus University School of Medicine. He is a member in the French & European society of microbiology. Dr. Al-Obeid has several scientific papers and projects either presented or published. He is an internationally recognized expert in many areas of advanced medicine including Internal Medicine, infectious Diseases & Clinical Microbiologic Research. He is a regularly sought after and requested lecturer at the majority of major medical schools, health systems, and National Medical Symposiums throughout the United States and Europe. Dr. Al-Obeid is reviewer for Several International Journal of Medicine in clinical microbiology and infection control. Recent publications include a paper on the resistance of Heterogeneous vancomycin resistance *Staphylococcus aureus* & another on the epidemiology of extensive drug resistant *Acinetobacter baumannii*. Dr. Al-Obeid is recognized by his peers as a Scientific and Medical expert that integrates new protocol in the treatment of multi-drug resistant gram negative bacteria like *Acinetobacter baumannii* highly resistant to the most of antibiotics especially patients suffering from acute and chronic ventilator associated pneumoniae VAP and bacteremia in the ICU. Actually Dr. Al-Obeid is head of clinical microbiology department, member of the infectious disease unit and the Co-chairman of infection control department at the Security Forces Hospital in Riyadh Saudi Arabia. Dr. Al-Obeid is an active member in the club on microbiology and infectious disease in Riyadh. Dr. Obeid has honored several times at the security forces hospital for his valuable work. Dr. Obeid presents his latest research at the 54th interscience conference on antimicrobial agent and chemotherapy ICAAC 2014 a Washington DC on the fifth of September 2014.

obeid\_jacques@hotmail.com

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