focus on identified gaps in knowledge, and laying emphasis on compliance.

http://dx.doi.org/10.1016/j.ijid.2014.03.1271

Type: Poster Presentation

Final Abstract Number: 61.023
Session: Infection Control, Nosocomial Infections and Critical Care
Date: Saturday, April 5, 2014
Time: 12:45-14:15
Room: Ballroom

Clonal lineages of resistant (HLAR) & virulent *Enterococcus faecalis* isolates from diverse sources in Nigeria

B. Ghebremedhin[1,*], A. Ibukun[2], T. Odugbemi[3], W. König[2]

[1] *University Witten, Med. Microbiology & Lab.Medicine, Wuppertal, Germany*
[2] *Medical Microbiology, Magdeburg, Germany*
[3] *Medical Microbiology and Parasitology, Lagos, Nigeria*

Background: Enterococci are the leading cause of nosocomial infections, and therefore a persisting clinical problem globally. This study was undertaken to compare the virulence and the high-level resistance towards aminoglycosides (HLAR) in *E. faecalis* of different sources: human, animals and environmental specimens

Methods & Materials: We investigated from in 1-yr-period in 2009 106 isolates of *Enterococcus faecalis* various human clinical specimens (45), stool samples of healthy animals: pigs (23), chicken (21), cattle (10) and a major recreation water body in Lagos (7 isolates). Identification and susceptibility testing was carried out using the automated VITEK-2 system. Multiplex PCR was used to investigate the presence of 6 high level aminoglycoside resistance genes (*aac(6′)-Ie-aph(2")-1a, aph (2")-Ib, aph(2")-Ic, aph(2")-Id, aph(3")-IIIa, ant(4′)-Ia)* and seven putative virulence genes (*esp*, *cyl*, *gelE*, *hyl*, *ace*, *efaA*, *asa1*). Multilocus sequence typing (MLST) scheme was used to analyse the clonality of the isolates.

Results: Only 3 isolates (pig, cattle and water isolate), had intermediate resistance to vancomycin and no acquired vancomycin resistance gene was detected. HLAR to gentamicin was observed in 46.7% of clinical isolates and 13.7% of animal isolates (chicken) and was accompanied by high level resistance to kanamycin, encoding of the *aac(6′)-Ie-aph(2")-1a* gene and resistance to ciprofloxacin with mutation in the *gyrA* (Gly105-Asp). Isolates with HLAR to Streptomycin harboured the *aph(3")-IIIa* gene. Mobile genetic elements *Tn916* was observed to be highly associated with the HLAR. MLST analysis revealed that 33.3% of HLAR isolates were ST6 belonging to clonal lineage CC2 and 25% were ST116. Other STs determined included ST40, ST28 and ST16. The virulence genes *esp* and *hyl* occurred only in clinical isolates (6.4% and 2.1%) while *cyl* was found in both clinical (8.5%) and animals (2%) isolates.

Conclusion: The spread of the *aac(6′)-Ie-aph(2")-Ia* and *aph(3")-IIIa* gene is responsible for high-level resistance to aminoglycosides among *E. faecalis* isolated from South-western region of Nigeria. Animal isolates belonged to ST116 whereas human isolates were mostly typed as ST6. Early detection of HLAR along with their virulence trait will help in preventing the establishment and spread of multidrug resistant *E. faecalis* in hospital setting and in the community.

http://dx.doi.org/10.1016/j.ijid.2014.03.1272

Type: Poster Presentation

Final Abstract Number: 61.024
Session: Infection Control, Nosocomial Infections and Critical Care
Date: Saturday, April 5, 2014
Time: 12:45-14:15
Room: Ballroom

Diphtheria immunity and serologic response after Td booster vaccination in Thai health care workers

S. Wiboonchutikul[1,*], W. Manosuthi[1], C. Sangsajja[1], V. Thientong[1], S. Likanonsakul[1], S. Srisopha[1], P. Termvises[1], J. Rujitip[1], S. Loiusirirotchanakul[2], P. Puthavathana[2]

[1] *Bamrasnaradura Infectious Diseases Institute, Nonthaburi, Thailand*
[2] *Faculty of Medicine Siriraj Hospital, Mahidol University, Bangkok, Thailand*

Background: Diphtheria remains circulate in many countries including Thailand. Health care workers (HCWs) are at risk to diphtheria exposure. No routine diphtheria-tetanus toxoid (Td) booster vaccination program for adults in Thailand. We aimed to assess baseline immunity against diphtheria among Thai HCWs and define factors associated with immune protection to diphtheria. Immunologic response as well as safety to Td booster vaccination was also evaluated.

Methods & Materials: A prospective study was conducted among HCWs during March–September 2013 at Bamrasnaradura Infectious Diseases Institute, Thailand. The prevalence and factors associated of seroprotection to diphtheria (diphtheria antibody levels $\geq$0.1 IU/ml) as measured by a toxoid enzyme-linked immunosorbent assay were determined. Seroprotection rate and diphtheria antibody level at pre- and post- vaccination were also compared.

Results: There were 250 HCWs with mean ($\pm$SD) age of 35.4 ($\pm$11.7) years and 76.4% of participants were females. By staff position categories, 62.0% were clinical staffs, 34.8% were non-clinical ancillary staffs and 3.2% were laboratory staffs. 72.4% had a history of adult diphtheria and/or tetanus booster vaccination before enrollment but only 30.4% were Td. A protective antibody was found in 89.2% of HCWs prior receiving Td booster vaccination, comparing to 98.4% after receiving first dose booster ($p < 0.001$). 100% of seroprotection was achieved after the second Td booster administration. The mean antibody level to diphtheria (95% CI) before and after first dose Td booster vaccination were 0.39 (0.35-0.44) and 1.20 (1.12-1.29), respectively ($p < 0.001$). Multivariate analysis showed only history of receiving adult Td booster vaccination was significantly associated with immune protection to diphtheria at baseline (odds ratio 5.39; 95% confidence interval 1.08-26.80; $p = 0.040$). No serious adverse event or hospitalization was observed after vaccination.

Conclusion: Thai HCWs may be at risk to acquire diphtheria infection. Td vaccine is safe and booster vaccination for Thai HCWs should be recommended. Routine Td booster vaccination program in Thai HCWs should be considered by local or public health administration.

http://dx.doi.org/10.1016/j.ijid.2014.03.1273