

Final Abstract Number: 56.008

Session: Antibiotics

Date: Saturday, June 16, 2012

Time: 12:45–14:15

Room: Poster & Exhibition Area

Methicillin-resistant staphylococci from pigs in Nsukka agricultural zone of Enugu State, Nigeria: occurrence, species distribution antimicrobial resistance profile and virulence traits

C. Ugwu¹, E. Gomez-Sanz², I.C. Agbo³, C. Torres², K. Chah^{4,*}

¹ Federal University of Technology Owerri, Owerri, Imo, Nigeria

² University of La Rioja, Logrono, Spain, Logrono, Spain

³ University of Nigeria, Nsukka, Nsukka, Nigeria

⁴ University of Nigeria, Nsukka, Nsukka, Enugu, Nigeria

Background: Methicillin-resistant (MR) staphylococci, particularly *Staphylococcus aureus*, have been reported in pigs in many European, American and Asian countries. However, in Nigeria, information on the occurrence and characteristics of methicillin-resistant staphylococci (MRS) is lacking. This study was conducted to determine the prevalence and molecular characterization of MRS in pigs in Nsukka Agricultural Zone of Enugu State, Nigeria.

Methods: Nasal and ear swab samples were collected from 291 randomly selected pigs in 16 farms in the area. After enrichment in nutrient broth, isolates were sub-cultured on ORSAB plates supplemented with 2ml/L of oxacillin. Identification of isolates was conducted by PCR and sequencing of *sodA* gene. Susceptibility testing to 17 antimicrobials was performed by disk-diffusion. All MRS were tested for *mecA* gene by PCR. Presence of antimicrobial resistance genes, exfoliative toxin genes (*exhA*, *exhB*, *exhC*, *exhD*) and virulence genes involved in biofilm production (*bap*, *icaA*, *icaB*, *icaC*, *icaD*, *icaR*) were investigated by PCR.

Results: Twenty-four MRS strains were isolated from 24 (8.2%) of the 291 pigs sampled. They belonged to four species namely: *S. sciuri* (54%), *S. lentus* (25%), *S. cohnii* (17%) and *S. haemolyticus* (4%). Ten (63%) of the 16 farms were positive for MRS and the prevalence in the farms studied ranged from 0–19%. All isolates were resistant to at least 3 antimicrobials. The isolates were resistant to oxacillin and cefoxitin (100%), fusidic acid (85%), penicillin (74%), tetracycline (74%), streptomycin (63%), ciprofloxacin (48%), clindamycin (44%), erythromycin (41%), gentamicin (26%), chloramphenicol (19%) and tobramycin (11%). All MRS isolates carried the *mecA* gene. Other resistance genes detected were (no of strains): *blaZ* (5), *tet(K)* (12), *tet(M)* (13), *tet(L)* (3), *erm(B)* (4), *erm(C)* (7), *aacA-aphD* (10), *aphA3* (5), *str* (15), *dfr(G)* (8), *catpC221* (1), and *catpC223* (2). All isolates were negative for all exfoliatin and biofilm formation genes tested.

Conclusion: The findings highlight the existence of multidrug-resistant strains of MR coagulase negative staphylococci (MRCoNS) in pigs in Nsukka agricultural zone, with *S. sciuri* being the predominant species. The possibility of transfer of *mecA* gene and other resistance genes from the MRCoNS to pathogenic *S. aureus* is a serious public health concern.

<http://dx.doi.org/10.1016/j.ijid.2012.05.559>

Final Abstract Number: 56.009

Session: Antibiotics

Date: Saturday, June 16, 2012

Time: 12:45–14:15

Room: Poster & Exhibition Area

Susceptibility of group A *Streptococcus* to antimicrobial agents – a surveillance study

B. Chazan^{1,*}, R. Raz¹, H. Edelstein², Y. Kennes², R. Colodner²

¹ Ha'Emek Medical Center & Rappaport Faculty of Medicine, Technion, Afula, Israel

² Ha'Emek Medical Center, Afula, Israel

Background: Streptococcal pharyngitis is a common bacterial infection in childhood, being *Streptococcus pyogenes* (Group A Streptococcus - GAS) responsible for the majority of cases. Antimicrobial treatment is indicated for symptomatic patients, when the pathogen is confirmed by culture or rapid antigen detection kits, but antimicrobial susceptibility is not routinely tested. Penicillin is the first choice empiric treatment but allergic patients should be treated with alternative antimicrobials. High levels of resistance of GAS to macrolides and tetracyclines have been reported from several countries.

The present study aims to determine the susceptibility of GAS in Northern Israel to penicillin, erythromycin, azithromycin, clindamycin and tetracycline.

Methods: All throat samples from outpatients received in a regional laboratory serving a half-million population in Northern Israel were cultured on StrepSelect agar (Hy Laboratories, Rehovot, Israel). Beta-hemolytic colonies resembling streptococci were identified as GAS by susceptibility to bacitracin disks (0.1 units) and Streptococcal Grouping Kit (Oxoid Ltd, Basingstoke, Hampshire, England). Minimal inhibitory concentration (MIC) for the antimicrobials mentioned above will be determined using Etest (AB-Biodisk, Solna, Sweden) according to manufacturer's instructions. D-test was performed to evaluate the presence of macrolide-lincosamide-streptogramin B [MLS_B] resistance.

Results: Three hundred GAS isolates were tested (208 for pediatric patients and 92 for adults, total mean age 16.1y). No resistance to penicillin was founded, one isolate (0.33%) was resistant to both macrolides tested, another single isolate (0.33%) showed intermediate susceptibility to clindamycin and 3 (1%) were resistant to tetracycline. No combined resistance was founded. D-test was negative for all the 300 isolates. The mean MIC₉₀ and 50 (in mcg/mL) were: penicillin 0.012 and 0.006, erythromycin 0.125 and 0.094, azithromycin 1.5 and 1, clindamycin 0.125 and 0.094 and tetracycline 0.094 and 0.064 respectively.

Conclusion: In spite of the wide use of antimicrobials in the community, we found high susceptibility of GAS to antimicrobials, without any significant change in the resistance pattern as compared with previous local data (2004). According to our data, current recommendations of empiric treatment for proven GAS pharyngitis are still appropriate. Hence, routinely testing of susceptibility is not justified, but periodic surveillance is recommended.

<http://dx.doi.org/10.1016/j.ijid.2012.05.560>