Título: DETECTION BY MULTIPLEX-PCR, MIC AND DISC-DIFFUSION B-LACTAM RESISTANCE IN Staphylococcus spp. ISOLATED FROM SICK ANIMALS


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Abstract

The resistance to β-lactam drugs in Staphylococcus spp. is a mainly antibiotic resistance in this bacterial family it is mediated by BlaZ, mecA and/or mecC genes. Staphylococcus spp. carrier mecA or mecC gene is called by Methicillin-resistant Staphylococcus spp. (MRS). The objective of this study was to detect β-lactam resistance in Staphylococcus spp. isolated from clinic samples of animals with different infections. There were evaluated 20 Staphylococcus spp. isolated from sick animals. There were performed multiplex-PCR to detect mecA, mecC and BlaZ genes, minimum inhibitory concentration (MIC) of oxacillin (256 to 0.5 µg/mL) and disc-diffusion of penicillin, oxacillin and cefoxitin. In three samples mecA gene were detected by PCR, with MIC ranged 1 to 64 µg/mL (MIC50 and MIC90 was 64 µg/mL) and resistant in disc-diffusion for the three antibiotics tested. In 8 Staphylococcus strains were amplified both mecA and BlaZ genes, the MIC ranged 8 to ≥256 µg/mL (MIC50 was 128 µg/mL and MIC90 was 32 µg/mL) and in disc-diffusion all strains were resistant to penicillin, 6 to oxacillin and 5 to cefoxitin. In 9 strains were amplified BlaZ gene. In three of these samples, MIC were <0.5 µg/mL (MIC50 and MIC90 was <0.5 µg/mL), oxacillin and cefoxitin were susceptible and penicillin were resistant in two samples. In 6 others BlaZ positive samples, MIC ranged 4 to ≥256 µg/mL (MIC50 was 128 µg/mL and MIC90 was 32 µg/mL), with resistance to penicillin in all strains, to oxacillin in 4 strains and to cefoxitin in 2. These 6 strains show another form of β-lactam resistance not included in the multiplex-PCR used despite the detection of mecA, mecC and BlaZ genes. Although the PCR is the gold standard technique to detect the resistance to β-lactam drugs, variations or mutations in the resistance genes can lead to false negative results. The association of these techniques opens the need for further studies about variations in theses resistant genes.

Key-words: mecA, BlaZ, MRS, oxacillin