Assessment of contamination on staff hands in veterinary services - The role of multidrug-resistant *Staphylococcus epidermidis*

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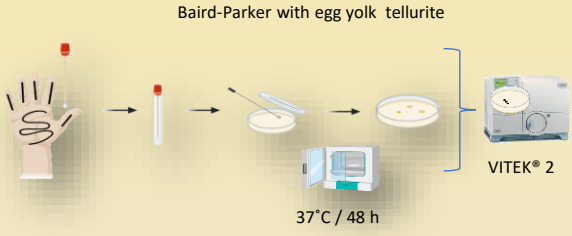
Introduction/Objectives

Veterinary Teaching hospitals (VTH) are associated with reservoirs of multi-resistant bacteria. Although *Staphylococcus epidermidis* is commensal on the skin, it is also considered opportunistic. antimicrobial resistance (AMR) is increasing among these pathogens, representing a concern, in terms of nosocomial infection (NI) control measures.
This study was developed to assess *Staphylococcus epidermidis* contamination on the hands of VTH staff, as well as the existence of AMR.

Materials and Methods

The isolates were collected from 25 workers (medical staff, technicians, and students), belonging to 7 different services: Company Animals Service (CAS), Surgery Service (SS), Necropsy Service (NS), Exotic and Wild Animal Service (EWAS), Equine and Farm Animals Service (EFAS), Infectious Disease Service (IDS), and Clinical Pathology Laboratory (CPL). The entire sampling process was carried out during working hours at the VTH, with clean hands.
The swabs were collected using the swab-wash technique (5x5 cm2 surface area) on the dominant hand. Four serial dilutions were performed and inoculated in Baird-Parker agar (BP) (Biolab®, Hungary), supplemented with egg yolk emulsion with potassium tellurite (VWR, Belgian) and sulphamethazine. The dish plates were then incubated at 37ºC for 48 hours, following the ISO 6887 protocol. Identification and antibiograms were carried out using Vitek2® system (Biomérieux®, France).



Results

The results suggest that *Staphylococcus epidermidis* was present on 36% of staff hands (9). The NS and CPL services had 1 positive case each, SS 3 cases, EFAS and CAS 2 cases each (Table 1).

Table 1- Presence of S. *epidermidis* in the hands of the workers from each service

	Medical Staff	Technicians	Students
CAS	2	0	0
SS	0	2	1
NS	0	1	0
EWAS	0	0	0
EFAS	1	1	0
IDS	0	0	0
CPL	0	1	0

From the nine isolates, six presented multi-resistance. The phenotypic profile of the isolates manifested resistance to clindamycin (100%) and erythromycin (66,67%). Conversely, gentamicin (11.1%) and kanamycin (11.1%) show a low percentage of resistance. Regarding the fluoroquinolones, enrofloxacin (88.9%), pradofloxacin (88.9%), and marbofloxacin (88.9%), the isolates were susceptible.

Table 2- Phenotypic profile of isolates in each service. S- Sensitive, I- Intermediate, R- Resistence

Antibiotics	Aminoglycosides		Fluoroquinolones			Macrolides	Lincosamides	Tetracycline
Zone	Gentamicin	Kanamycin	Enrofloxacin	Marbofloxacin	Pradofloxacin	Erytromycin	Clindamycin	Tetracycline
Surgery Service (1)	S	I	I	R	I	R	R	R
Clinical Pathology Laboratory (1)	R	R	S	S	S	R	R	S
Surgery Service (1), Equine and Farm animals (1), Necropsy Service (1)	S	S	S	S	S	S	R	S
Company animals (2), Surgery Service (1)	S	S	S	S	S	R	R	S
Equine and Farm animals (1)	S	S	S	S	S	R	R	R

Conclusions

The presence of AMR organisms in staff hands represents a concern. More studies should be done to improve hygiene and prevent NI. Future studies should focus on analysing other epidemiologic data and the presence of AMR. It is necessary to control the procedures related to hands hygiene to minimize the risks of public health.

References

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