ENDOSCOPES DISINFECTION CONTROL: THE USE OF A RAPID MOLECULAR TEST (GeneXpert®)

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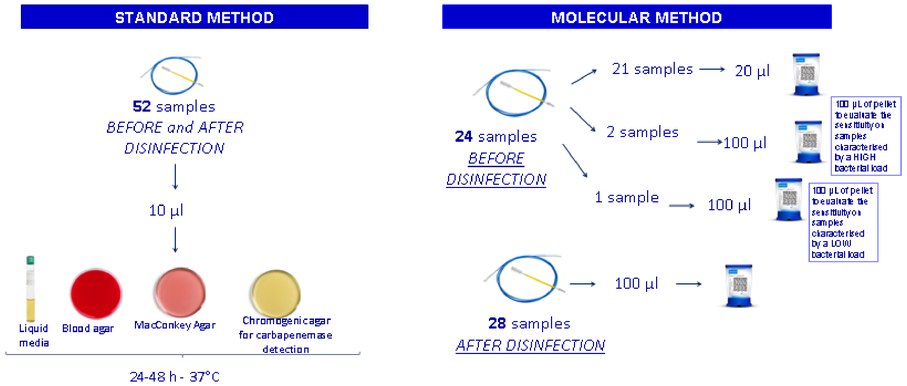
OBJECTIVES

In Health facilities the multi-drugs resistent microrganisms transmission can occured though different ways, such as the use of contaminated endoscope. The international guidelines recommend cleaning and disinfecting of all endoscopes components, but characteristic complexity and fragility of materials make these instruments particularly difficult to treat, becoming a source of colonization or infection.The main sources of contamination are infected or colonised patients.
The goal of this study was to evaluate the use of GeneXpert® Carba-R (Cepheid, Sunnyvale, USA) as a screening test to detect within 50 minutes the presence of strains characterised by antimicrobial resistance genes (KPC, NDM, VIM, OXA, IMP) in instruments before and after disinfection.

METHODS

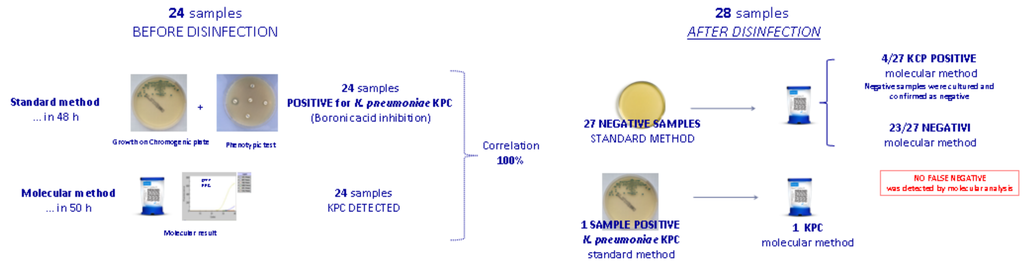
In the period 2016 June – 2017 April we evaluated 52 samples (24 collected before disinfection and 28 after a strong disinfection performed with peracetic acid) from duodenoscope, gastroscope, bronchoscope and colonscope used for patients colonised by Klebsiella pneumoniae carbapenemase producer. All samples were centrifuged and pellets (10 µL) were inoculed on liquid media, blood agar, Mac Conkey and chromogenic agar for carbapenemase detection plates. Medias were incubated at 37°C for 24-48 hours.
We used GeneXpert® method to analysed samples collected before disinfection using 20 µL of pellet for 21 of them, for 3 we used 100 µL of pellet to evaluate the sensitivity on samples characterised by a high (2 samples) or low (1 sample) bacterial load. The analysis of the 28 samples collected after disinfection were performed using 100 µL of pellet.

SAMPLES	n
BEFORE DISINFECTION	24
AFTER DISINFECTION	28
TOT	**52**



RESULTS

Bacterial culture of some samples collected before disinfection were positive for Klebsiella pneumoniae KPC by both phenotypic test with bacterial load >10^6 CFU/mL and molecular method (correlation of 100%, wheras others samples were negative).
Among samples collected after disinfection, 27 (96,4%) were negative for culture, only 4 of them were positive for KPC gene research performed by GeneXpert®. Despite a second inoculation of pellet of these samples, bacterial cultures were negative. Only 1 sample was positive with both methods (K.pneumoniae, KPC).



CONCLUSION

Our results show the availability of a molecular rapid method as a screening and endoscope disinfection control test (no false negative were detected). GeneXpert® method allows to obtain a reduced turnaround time for negative samples, furthermore it provides results within 50 minutes compared to 24-48 hour required for culture. Positivity of molecular test in negative culture samples is probably due to the presence of genetic material of no-viable strains.
Further tests will be useful to define the optimal pellet quantity to use for molecular test, to verify test sensitivity and to evaluate possible interference in samples with low or high bacterial load.

27th ECCMID EUROPEAN CONGRESS OF CLINICAL MICROBIOLOGY AND INFECTIOUS DISEASES Vienna, Austria 22 – 25 April 2017

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