O212

2-hour Oral Session

Comparison of microbiological and molecular (PCR rDNA 16S) techniques on excised heart valves at Toulouse University Hospital, France, 2010-2014

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Objectives: Infective endocarditis (IE) is a life-threatening disease. Positive blood cultures (BC) and positive heart valve (HV) culture are major Duke's criterions for the diagnosis of IE. However, blood cultures are negative in 10 to 30% of cases and culture of excised HV is poorly sensitive. Here we evaluate the clinical utility of systematic culture on all HV excised at the University Hospital of Toulouse, in patients with and without IE ; and the clinical utility of 16S rDNA PCR/sequencing.

Methods: All excised HV were collected at University Hospital of Toulouse, between January, 2010 and October, 2014. HV samples were inoculated on chocolate and Columbia sheep blood agar plates and on thioglycolate broth for culture at 37°C with 5% CO_2 for 30 days. For each patient, we collected the results of blood cultures (number of realized/positive samples), HV culture (identified bacteria, growth delay) and serology (*C. burnetii, Bartonella* spp., *M. pneumoniae*, *C. pneumonia*, *Legionella* spp.). In specific cases, HV DNA extraction and 16S rDNA PCR/sequencing were realized.

Results: A total of 369 valves were studied: 91 (24.6%) from patients with positive BC and IE diagnosis, 278 (75.4%) from patients without IE or suspicion of IE with negative BC. Localisation of excised HV was: aortic 57%, mitral 27%, aortic+mitral 4% or other (tricuspid, pulmonary) < 1%. HV culture was positive in 59 (16%) of cases: 31% coagulase negative staphylococci, 20% *S. aureus*, 17% *Enterococcus* spp., 10% *Streptococcus* spp. Concordance between HV and BC was obtained in 29 (49%) cases ; discordances in 7 (12%) cases (identified bacteria considered as contaminant). HV culture was positive in 23 (39%) cases with negative BC. In 9 cases, identified bacteria was considered as contaminant (delay of growth 15.8 ± 8.7 days) and in 14 cases, HV culture helped in IE diagnosis (growth delay 3.6 ± 4.2 days). 16S rDNA PCR was realized in 143 cases and was positive in 33 (23%) cases: *Streptococcus* spp. 43%, *Staphylococcus* spp. 18%, *Enterococcus* spp. 6%. PCR helped to diagnose 12 IE cases (negative HV and BC) from which 3 cases of *T. whipplei*, *C. burnettii* and *Ureaplasma parvum* endocarditis.

Conclusion: In conclusion, excised heart valves should not be routinely sent to the microbiology laboratory because of the high number of false positive (contaminants) and false negative (antibiotic treatment) cases. Culture of HV must be applied to patients with IE documented blood culture or IE suspicion. PCR of valve tissue is a reliable technique but also on selected cases (IE with negative blood cultures which are mainly due to fastidious or nonculturable bacteria).