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WHAT MATTERS MORE IN TESTING BACTERIAL ADHESION: FLOW CONDITIONS OR CHOICE OF BACTERIAL STRAIN?

To the Editor:

We read with great interest the work published by Veloso and colleagues¹ that investigated the bacterial adherence to pulmonary valve graft tissues under static and flow conditions. These experiments were achieved using wild bacterial strains of *Staphylococcus aureus*, *Staphylococcus epidermidis*, and *Streptococcus sanguinis* and the following valvular substrates: bovine pericardium patch, bovine jugular vein, and cryopreserved homograft. The authors concluded that the surface composition of bovine jugular vein and homograft tissues themselves, bacterial surface proteins, and shear forces per se were not the prime determinants of bacterial adherence. These results are in contradiction with our findings. We demonstrated that the bacterial adherence was greater with bovine jugular vein compared with other substrates and concluded that the Melody valve (Medtronic, Inc, Minneapolis, Minn) represented the preferential substrate for differential bacterial adhesions.² Even if these results might appear contradictory at first sight, they might just reflect a difference in experimental setting. Veloso and colleagues¹ tested wild bacterial strains when we used pathogenic strains isolated from patients diagnosed with Melody valve infective endocarditis. Various studies have shown that bacterial adhesion is influenced by the pathogenicity of the bacteria. Some strains might be more aggressive than others. These pathogenic strains are known to develop pathogenic surface molecules that allow these isolates to preferentially bind and infect several medical devices. Adhesion is a complex mechanism involving platelets or bacterial binding proteins and in which coagulation and inflammation processes are not fully understood. Being

able to build more sophisticated in vitro studies mimicking what happening in vivo would provide evidence to understand why we and others have shown a higher incidence of endocarditis with bovine jugular vein valves (ie, Contegra [Medtronic] or Melody) than other types of right ventricle-to-pulmonary artery conduits.^{3,4} Ultimately, those studies may help to develop conservative treatments for valvular implants targeting specifically tissular binding proteins and to test the effects of antiplatelet therapy on bacterial adhesion.⁵

Zakaria Jalal, MD^{a,b,c}

Olivier Villemain, MD, PhD^d

Jean-Benoit Thambo, MD, PhD^{a,b,c}

Younes Boudjemline, MD, PhD^e

^aDepartment of Paediatric and Adult Congenital
Cardiology

Bordeaux University Hospital
Pessac, France

^bInstitut Hospitalo Universitaire Liryc
Electrophysiology and Heart Modeling Institute
fondation Bordeaux Université
Bordeaux, France

^cInstitut national de la santé et de la recherche médicale
Centre de recherche Cardio-Thoracique de Bordeaux
Bordeaux, France

^dNecker Enfants malades
Assistance publique des hopitaux de Paris
Université Paris Descartes
Sorbonne Paris Cité
Paris, France

^eCardiac Catheterization Laboratories
Sidra Heart Center
Sidra Medicine
Doha, Qatar

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