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## ❖ Bicuspid aortic valve (BAV):

- Is the most congenital cardiac anomaly in the adult population.
- There is an increased risk of Thoracic aortic aneurysm (TAA) in case of BAV (1,2).
- Pathophysiology remains still not well known.
- There's no validated predictive marker of TAA.

## ❖ IRM-BAO study:

- Two-year, single-center and prospective study.
- Approved by the CPP (number 2017-A01508-45) and carried out in 2019 at the Georges Pompidou European Hospital.
- A minimum of 50 patients should be included.
- **Aim** : Developing and validating a non invasive predictive factor of aortic dilatation, using the arterial stiffness measured by MRI, transthoracic ultrasound (TTE) and ultrafast ultrasound (UF).

## MRI

- ❖ The only technique available to:
  - Evaluate the entire aortic arch.
  - Evaluate both the circumferential (distensibility) and longitudinal (PWV) stiffness.



## UF

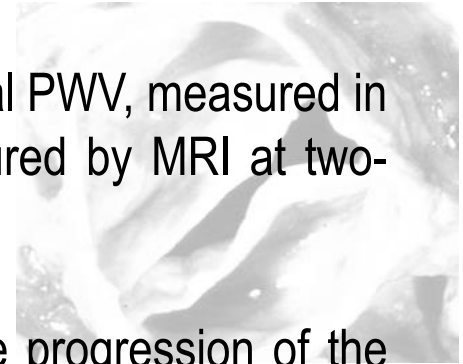
- ❖ The purpose of using a high-speed sequence (2000 images per second) is to perform a tracking of the aortic wall during the cardiac cycle.
- ❖ The evaluation will also be performed at common carotid arteries for the measurement of pulse wave velocity (PWV)

## TTE

- ❖ The most common method of evaluating BAV.
- ❖ Allows the evaluation of the aortic diameter, valvular function and the BAV morphotype.



- **Primary objective**: demonstrate a correlation between the local PWV, measured in MRI, and the progression of thoracic aorta diameters, measured by MRI at two-year intervals.
- **Secondary objective**: demonstrate a correlation between the progression of the TAA with measurements of aortic distensibility, by MRI, TTE and UF.



## BENEFITS

- It's the first longitudinal study which evaluate the progression of the TAA according to biomechanical parameters (measured by MRI, TEE and UF).
- It should provide a better understanding of the influence of stiffness parameters on aortic dilatation to evaluate the potential prognostic impact of these indicators in routine practice.
- It's the first study which evaluate the ascending aorta in UF.