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THÈSE

pour le

DIPLÔME D'ÉTAT DE DOCTEUR EN MÉDECINE

Qualification en CARDIOLOGIE ET MALADIES VASCULAIRES

Predictive role of intracardiac electrophysiological study after transcatheter aortic valve implantation

Rôle prédictif de l'exploration électrophysiologique après l'implantation transcatheter d'une valve aortique

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Sous la direction du Docteur Poirier Antoine

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LIST OF ABBREVIATIONS

LBBB	Left Bundle Branch Block
RBBB	Right Bundle Branch Block
EPS	Electrophysiology Study
TAVI	Transcatheter Aortic Valve Implantation
AVB	Atrio Ventricular Block
ECG	Electrocardiogramme
CI	Confidence Interval
OR	Odds Ratio
HV delay	His Ventricle delay
LVEF	Left Ventricular Ejection Fraction
ms	Millisecond

INTRODUCTION / BACKGROUND

1/ Generalities and complications

Transcatheter Aortic Valve Implantation (TAVI) has become the technique of choice for the management of aortic stenosis in patients at intermediate and high risk for cardiac surgery. In the latest 2021 guidelines, TAVI management is recommended for older patients (≥75 years) or those with a high EuroSCORE II surgical risk >8% (or logistic EuroSCORE I >10% in 2017 guidelines) (1) (2).

However, expanding the indications of TAVI to younger, intermediate-risk patients requires us to enhance our understanding of rhythmic complications after TAVI. The most frequent complication is the occurrence of atrioventricular conductive disorders.

The incidence of de novo left block varies between 10% and 30% (3,4). This risk is increased in case of self-expanding valves (such as CoreValve®) because they are inserted lower and they continue to open in the following days (5).

The need for cardiac pacing has a rate of 14% in TAVI compared to 7% in surgery (6). Despite advancements in techniques, the post-TAVI pacemaker rate has remained relatively stable in recent years (7).

According to a meta-analysis of 11 studies including 7032 patients, there is no significant excess risk of overall mortality in patients who receive a pacemaker post TAVI (8). Nevertheless, there is probably an increase in cardiac mortality ($p = 0.06$), which might be attributed to deleterious permanent pacing (9).

2/ Post-TAVI monitoring

The duration of hospital monitoring is a key aspect of patient care. It will depend on the presence of risk factors for high-grade conduction disorder. New-onset left bundle branch block (LBBB) is the most common conduction disturbance after TAVI (10).

Several studies have investigated these factors, and it appears that the factors most strongly associated with disorders of the conductions are:

- pre-implantation right bundle branch block,
- the occurrence of left bundle branch block after TAVI and
- prolongation of PR (11).

These low grade conduction disorders are therefore risk factors for high grade conduction disorders (12).

Management of conduction disturbances following transcatheter aortic valve replacement depends on the type of conduction disorder, as proposed by an expert panel (13).

3/ Management of post TAVI conduction disorders

There are two distinct situations in the guidelines, the first, which is the subject of a class 1 recommendation with a level of evidence B, concerns a high-grade conduction disorder requiring implantation of a pacemaker during hospitalization (14). The second situation involves the emergence of a low-grade conduction disorder, which may or may not progress.

In the second case, the recommendations suggest either ambulatory ECG monitoring for 7 to 30 days or electrophysiological studies for patients following TAVI. A low-grade conduction disorder is defined as the presence of new onset

LBBB with a QRS duration >150 ms or a PR interval >240 ms with no further prolongation during the 48 hours following TAVI.

However, these recommendations are classified as Level IIA and Grade C level of evidence (14).

4/ Electrophysiology study

The exploration of electrophysiology is based on a study by Scheinman et al. (15) in which they examined the prognostic value of the HV delay and the progression rate to atrioventricular block in symptomatic patients (syncope, lipothymia). As a result of this study, an electrophysiology study with an HV delay exceeding 70 ms may be considered positive for permanent pacing.

In some studies, electrophysiology study was able to identify most patients who developed high-grade atrio ventricular block; for instance, the positive predictive value was 87% in the study by Gronda et al. (15) This study was performed in 155 patients (107 with previous syncope, 48 without or with few symptoms).

The inter-individual reproducibility of this method has been poorly studied, with one study from 1986 demonstrating low reproducibility (16).

Study objective

The aim of the study is to investigate the predictive value of electrophysiology study in patients with low-grade conduction disorders after TAVI.

METHODS

1/ Design and study population

This was a single-center, retrospective, observational and analytical study. Involving all patients who underwent TAVI at our center (University Hospital, Angers, France) between August 2016 and February 2022 and electrophysiology study for a new low-grade conduction disorder during the hospitalization.

The study focuses on low-conduction disorders, such as situations where branch block worsened or appeared and when patients benefited from electrophysiology study. LBBB and RBBB was defined according to the American College of Cardiology/American Heart Association/Heart Rhythm Society (ACC/AHA/HRS) recommendations (17). A QRS duration exceeding 120 ms is considered indicative of LBBB or RBBB when it meets the morphological criteria.

Patients with other isolated low-conduction disorders or a clear indication for a pacemaker are excluded, such as high-grade conduction disorders or alternating branch block.

However, patients with paroxysmal high-grade conduction disorders as part of the procedure are not excluded.

2/ Clinical and paraclinical data

Clinical and paraclinical data are collected retrospectively, from hospitalization reports, complementary examination reports, biological results, and the patient computerized files at Angers University Hospital. Prior authorization was obtained from the CNIL to use patients' medical data for this study. The study was carried out in accordance with the Declaration of Helsinki

(Commission Nationale de l'Informatique et des Libertés authorization: AR-220066v0).

Clinical data included patient age at the time of TAVI, weight, height, cardiovascular risk factors, medical history, functional signs (such as NYHA dyspnea, lipothymia, syncope and OAP), type of bioprosthesis implanted, the presence of cardiac slowing medications and whether they were discontinued preoperatively or not. Data on immediate complications of the procedure, including hemorrhage, stroke, pericardial effusion, immediate complete high atrio ventricular block were also collected.

The following para-clinical data were also collected:

- Biology: ultra-sensitive Troponin, hemoglobin, pro BNP, GFR according to MDRD.
- Electrocardiogram data including daily recordings from day 1 to day 7: rhythm analysis, measurement of PR, QRS and QT intervals and QRS morphology.
- Transthoracic echocardiography: LVEF, presence or absence of bicuspidism, mean aortic valve gradient and indexed valve area, aortic and mitral insufficiency and pulmonary artery systolic pressure PAPS.

All EuroSCORE calculations were performed using the official website recommended in the guidelines: https://www.euroscore.org/. EuroSCORE assesses the risk of heart surgery in adults and is based on an international multicenter database. This score considers various factors, including patient-related factors (such as cardiovascular risk factors and comorbidities), cardiac

condition (like LVEF and pulmonary hypertension) and surgical aspects (including urgency level and prior cardiac surgeries).

3/ TAVI procedure

The indication for TAVI and its feasibility was determined by a heart team comprising interventional cardiologists, cardiac surgeons and an anesthesiologist. The valves used during the study period were balloon-expandable valves (Edwards® Sapien) or self- expendable valves (Medtronic® CoreValve Evolut R or CoreValve Evolut Pro).

The medical-surgical staff determined:

- Technical feasibility based on anatomy,
- Vascular access (femoral or carotid),
- Prosthesis type,
- Prosthesis size and the need for balloon pre-dilatation.

After surgery, patients were monitored in the recovery room or USIC for at least the first day.

2/ Pacemaker indication

The decision to implant a pacemaker was at the discretion of the electrophysiologist based on the evolution of conductive disorders in the days following TAVI. The electrophysiology study was performed according to the individual judgment of the electrophysiologist. The HV cut-off delay was generally set at 70 ms, following the analogy with electrophysiology study in syncope (14).

3/ Performing electro-physiology study

In patients with a bundle branch block, the quality of infra-Hisian conduction is assessed through intracardiac electrophysiological studies, particularly by measuring the HV interval.

The HV delay is measured between depolarization of the His bundle and the ventricles, typically the first QRS deflection on a 12-lead ECG (18).

This measurement is performed in real time during the procedure by operator (observer A).

To assess reproducibility, HV delay measurement were conducted post-hoc by another cardiologist (observer B) in blind manner. In accordance with the 2021 guidelines, a positive HV delay was defined as greater than or equal to 70ms.

4/ Follow up

Patients received routine clinical follow-up, including one to two visits with a cardiologist in the first year after the procedure for echography control and one visit for pacemaker control.

From these data, pacemaker implantation and mortality rates were assessed at 1 year after TAVI. For patients with implanted pacemaker, ventricular pacing rates at the initial visit and at one year was recorded.

The primary endpoint was the occurrence of permanent or paroxysmal high degree atrio ventricular block after TAVI, assessed at the one year pacemaker control visit. This endpoint was identified by ventricular stimulation exceeding

strictly 1%. The stimulation threshold was set at 1%, consistent with other large studies on high-grade conduction disorders (19–21).

5/ Statistical analysis

Categorical variables are presented as numbers and percentages, and differences between groups were assessed using chi-square test. Continuous variables are presented as mean and standard deviation and differences were assessed using Student t-test. Finally, to compare HV delay values we used the paired Student t test.

A p value less than 0.05 was considered as significant. Data analysis was conducted using R software® version 4.3.0 (R Core Team. USA).

RESULTS

1/ Population characteristics

During the study period from January 2016 to february 2022, a total of 1683 TAVI procedures were performed at our center. Among these, 49 patients benefited from electrophysiology study due to either the worsening or appearance of a branch block, and they were included in our study (see flow chart in Figure 1). The exact indications of the electrophysiology study are detailed in Table 2.

The clinical baseline, echocardiographic and periprocedural characteristics of the study population are detailed in Table 1. The mean age was 81,5 years and 59.2% of patients were female. The mean Logistic EuroSCORE was 9,3%. The exact indications of the electrophysiology study are detailed in Table 2.

Out of the 38 patients with a positive HV delay (>70ms), 32 were received pacemakers during the hospitalization. Among the non-implanted patients, their HV delay was measured between 70 and 80ms, and the reason for not receiving a pacemaker was not mentioned on the operative report. Of these patients:

- One patient will require a pacemaker in the future (beyond 3 months) due to syncope;
- Two patients were hospitalized for lipothymia or syncope but did not receive a pacemaker;
- And three of them died after one year (one due to refractory heart failure and two from unknown cause).

The mean day of electrophysiology study was day 6 [4;7] in both groups, as shown in Figure 2; there was no significant difference. The timing of electrophysiology study based on the obtained results is presented in Figure 3.

2/ Follow up and primary endpoint: stimulation ⩾1% at one year

One-year follow-up data were available for 37 patients (75,5%) while ten patients had incomplete follow-up. Among them, five had received pacemakers post TAVI during hospitalization. Given of the absence of any admission for pacemaker implantation in all implanting centers in the region, we considered the remaining five patients with incomplete follow-up as not having high degree atrio ventricular block. There were no recorded deaths during the first year following TAVI.

Among the study population, 33 pacemakers (67,3%) were implanted during the initial hospitalization and one pacemaker after 3 months for syncope. During the initial hospitalization, pacemakers were implanted with a median delay of 6,5 days ± 2,8.

Among the patients who received a pacemaker, 4 (8,2% of the study population) were implanted because of occurrence of HAVB during electrophysiology study, 28 (57,1% of the study population) due to positive electrophysiology study and 1 patient (2,0 % of the study population) received prophylactic pacemakers (with electrophysiology study <70ms). Details of the indications for implanted pacemakers are presented in the Table 3.

Within one year after TAVI, 12 patients (24,5%) reached the primary endpoint, which was defined as ventricular stimulation ≥1% at one year.

3/ Inter-observer variability

The HV delay measurements during the examination were compared with those performed later by another cardiologist. The cardiologist responsible for the later measurements was a rhythmologist (observer B) who had no prior knowledge of the initial measurements.
The comparison between the two measurements is shown in Figure 4. There is no significant difference between the two measurements. But there is an 8,2% of difference in decision making regarding the implantation of a pacemaker. Among the 33 electrophysiology tracings available:

- Observer B would have classified the HV delay as negative for three patients among those classified as positive by Observer A.
- Observer B would have classified the HV delay as positive for one patient among those classified as negative by Observer A.

4/ Electrophysiology study performance

4.1 Sensibility and specificity

In the appendix, Figure 1 illustrates the parameters of the electrophysiology study. The sensitivity of electrophysiology study is 100%, indicating that all patients requiring pacing ≥ 1% tested positive. However, the specificity is 30%.

According to the ROC curve (figure 5), a highly sensitive cut-off was proposed strictly greater than 70ms for HV delay (sensitivity of 100 % and specificity of 34%).

4.2 Negative predictive value and positive predictive value

In terms of predictive values, the test has a 100% negative predictive value (NPV), but a positive predictive value (PPV) of only 31%.

5/ Logistic regression

The logistic regression analysis included as variables age, male gender, valve type, diabete, HAVB occurrence during TAVI procedure, PR and QRS duration at day 2.

HAVB is defined as ventricular stimulation exceeding 1% on Pacemaker interrogation one year after Transcatheter Aortic Valve Implantation.

Univariate and multivariate logistic regression analysis were presented in the Table 4. *In the univariate analysis* 10ms increase in the HV delay were associated with higher risk of HAVB occurrence (OR: 1,66 [1,04; 2,65], p= 0,03).

In the multivariate analysis, 10ms increase in the HV delay were not significantly associated with higher risk of HAVB significative occurrence (OR: 2.37 [0,86; 6.51], p = 0.09).

6/ Adverse effects of electrophysiology study

This cohort included four cases (8,2%) of traumatic complete atrio ventricular block during electrophysiology study. This undesirable effect can occur when there is contact between the right bundle branch and a compromised left bundle branch during exploration. While some patients recover quickly,

others do not. In our study, all patients with traumatic HAVB received a pacemaker immediately and one of them had a ventricular stimulation >1% after one year.

DISCUSSION

This retrospective and single center study investigates the predictive value of electrophysiology study in patients with new low grade conduction disorders after TAVI. The results of this study suggest that electrophysiology study can detect all patients who will require ventricular pacing with a sensitivity of 100%, but it lacks specificity (29%). Notably, this study, which is one of the first to focus on the comparability of the electrophysiology study between operators shedding light on the subjectivity of this test.

However, this study had some limitations. Firstly, the retrospective design resulted in missing data, particularly in the context of pacemaker checkups at one year. Additionally, the management of low grade disorder conduction was not standardized and has evolved between 2016 and 2022. Regarding pacemaker indications, one prophylactic pacemaker was implanted even though these patients would not have met the recent guidelines criteria for implantation.

Secondly, definition of primary endpoint may have potentially overestimated clinically relevant high atrio ventricular block. The reported high atrio ventricular block occurrence in our study (24,5%) was higher than the rates reported in the literature (typically around 17 %) (4). Furthermore, the study exclusively targeted patients who underwent electrophysiology study with bundle branch block. At the beginning of the study, electrophysiology study was less commonly performed compared to its current prevalence, and it was primarily reserved for patients at a higher risk of developing high-grade conduction disorders.

In this study, significant high atrioventricular block was defined as pacing exceeding 1%. However, the criteria is not perfect, as pacemakers can sometimes stimulate the ventricles even in the absence of a high-grade conduction disorders, such as a prolonged PR interval. Some brands of pacemaker allow ventricular events to be recorded, but this cannot be done retrospectively.

This study questions using electrophysiology study as sole criterion for pacemaker implantation, as it can yield false-positive results in many cases.

Furthermore, in contrast to a native branch block, it's important to consider disorders after a TAVI procedure may be associated with inflammation and edema, suggesting the potential for reversibility.

A recent prospective study on post-TAVI conduction disorders, published in 2023, by Massoullié and al. (22). They studied a population of 183 post-TAVI patients with persistent low-grade conduction disorders who had undergone electrophysiology study. Out of these, 47 patients with an HV delay greater than 70ms received a pacemaker, while the remaining were equipped with a loop recorder. In the sensitivity analysis, the HV threshold 70 ms demonstrated a specificity of 82,7% and a sensitivity of 44,6% for predicting the occurrence of high-grade AV conduction disturbances at 12 months. The primary end point was the incidence of high-grade AV conduction disorders (complete AVB and second-degree Mobitz II AVB). The identification of AV conduction disturbances was validated by two blinded operators using electrical recordings from either the pacemaker or loop recorder. In the loop recorder group, 34 patients were

implanted but only 5 of them presented symptoms such as syncope or heart failure du to complete AVB.

Ten patients died during 12-month follow-up. There was no difference in mortality between the pacemaker and ILR groups. In the ILR group, there was 1 case of sudden cardiac arrest without the opportunity to interpret ILR records, 4 cardiovascular deaths (2 ischemic strokes, 1 cardiogenic shock, and 1 endocarditis) and 4 no cardiovascular deaths. In the pacemaker group, there was 1 no cardiovascular death.

The disparity in results between our study and the study by Massoullié and al. is likely attributed to the detection of high-grade conduction disorders in patients with negative electrophysiology study. In our study, conduction disorders are identified only when symptoms are present or during a systematic annual visit. In Massoullié and al. study, screening is conducted systematically, irrespective of symptoms.

Given that recorders allow us to detect all high-grade conduction disorders, is it truly necessary to implant pacemaker all patients with conduction disorders?

Another study addressing this issue is the one conducted by Rodés Cabau and al study published in 2018 (23). This study involved 103 patients with de novo bundle branch block post TAVI that persist ≥3 days post intervention. Patients were equipped with loop recorder, and the study's endpoints included the incidence of high-grade AV block at 12 months and the occurrence of arrhythmia.

Among them, ten patients (10%) experienced at least one episode of severe bradycardia, while fifteen patients (15%) had at least one episode of HAVB . These brady arrhythmic episodes prompted treatment changes in eleven patients (11%), beta-blocker reduction or withdrawal in four patients (4%) and pacemaker implantation in ten patients (10%). Remarkably, bradycardia was asymptomatic in sixteen patients (76% of cases).

Once again in this study, the majority of patients remained asymptomatic.

Further research is warranted to determine the appropriateness of pacemaker implantation in cases of asymptomatic high-grade conduction disorders.

CONCLUSION

This study suggests that an negative electrophysiology study provides the basis for safely discharging patients with de novo LBBB. However, it is worth noting that relying solely on electrophysiology study results can potentially lead to the inappropriate implantation of a pacemaker.

The priority is to ensure patient safety, often leading to a cautious approach that includes pacemakers implantation to avoid missing any occurrences of high-degree atrioventricular block.

The limited specificity of electrophysiology study for managing new-onset LBBB leaves clinicians with a difficult balance between a potentially unnecessary or harmful pacemaker implantation and the risk from delayed AVB.

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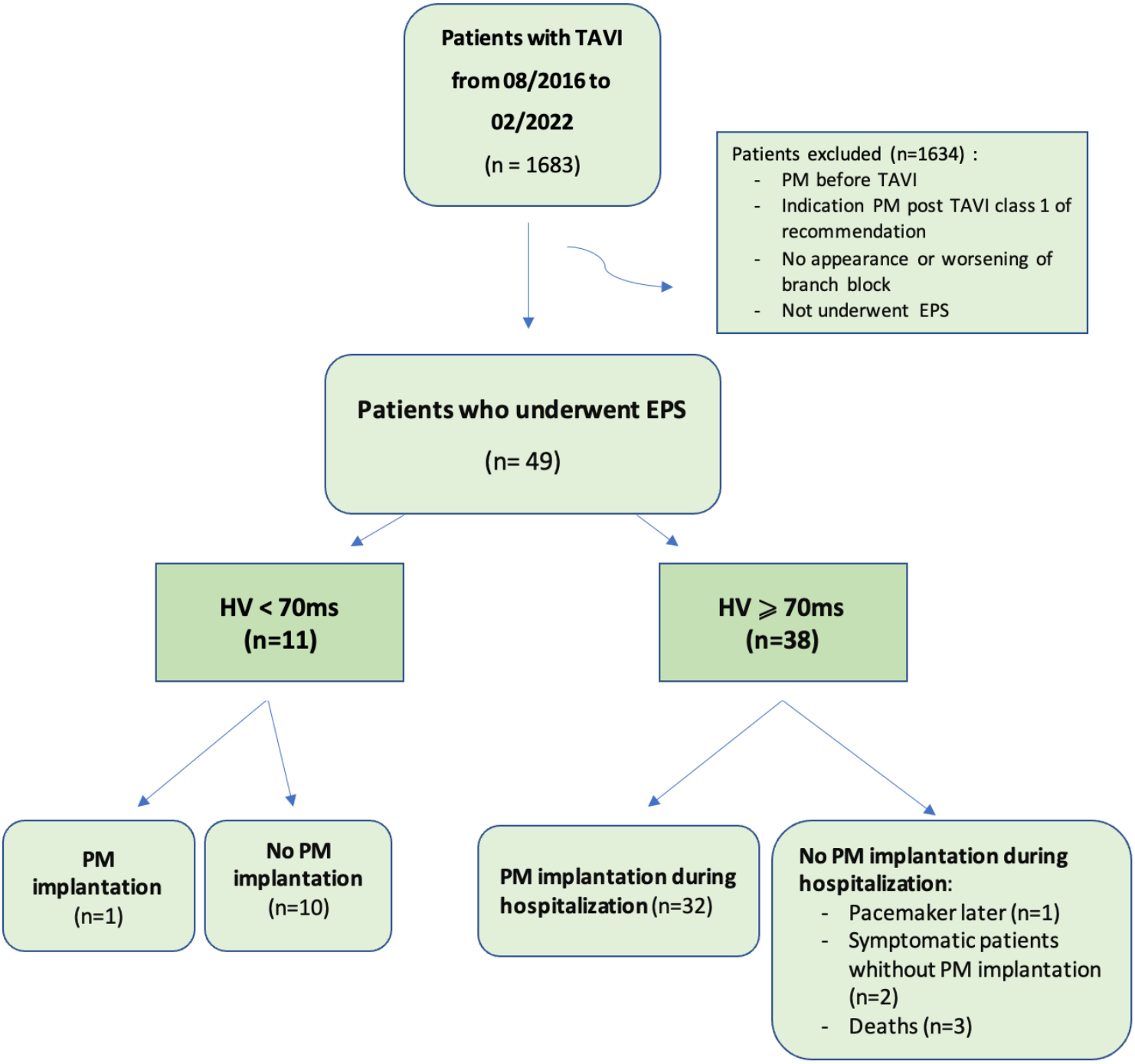

Figure 1. Study Population Flow chart

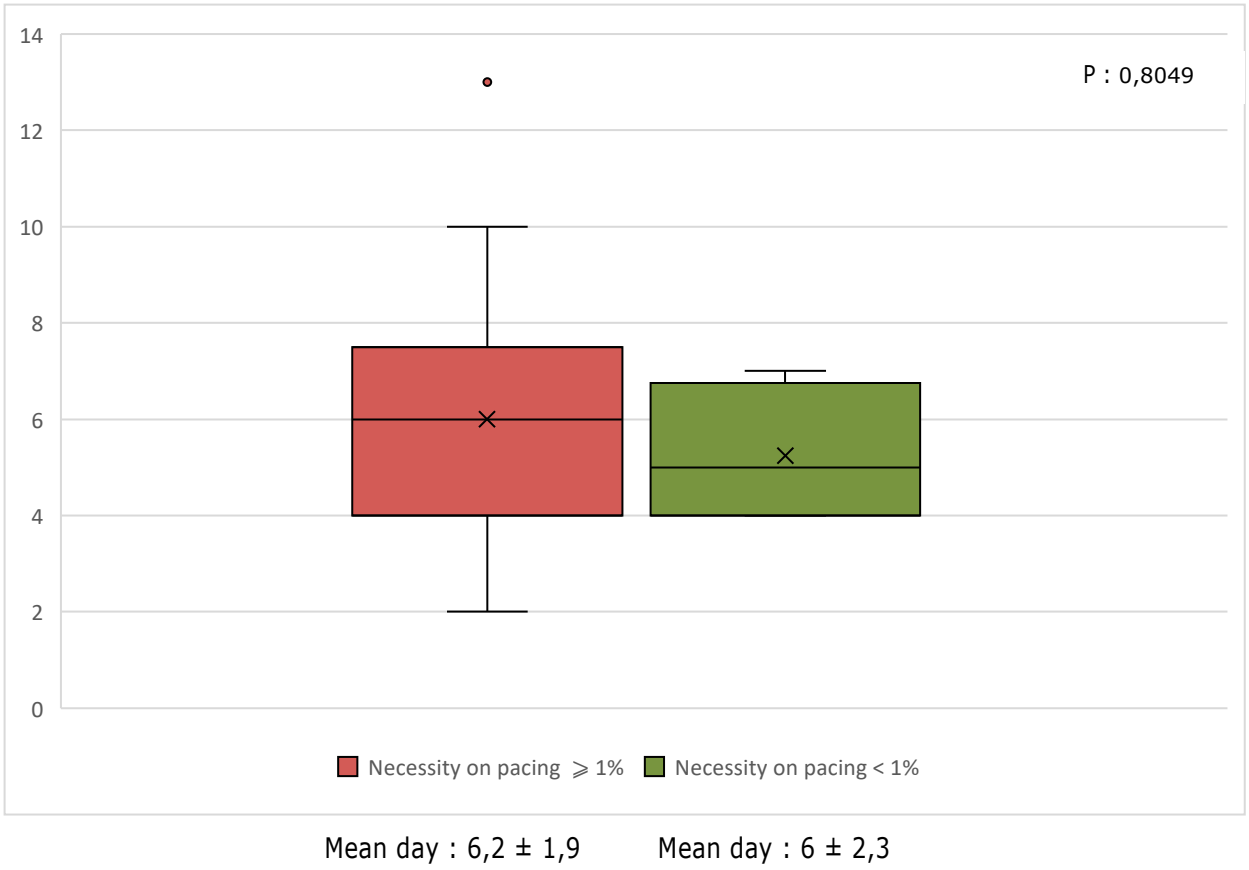

Figure 2. Comparison of pacing necessity according to EPS Day

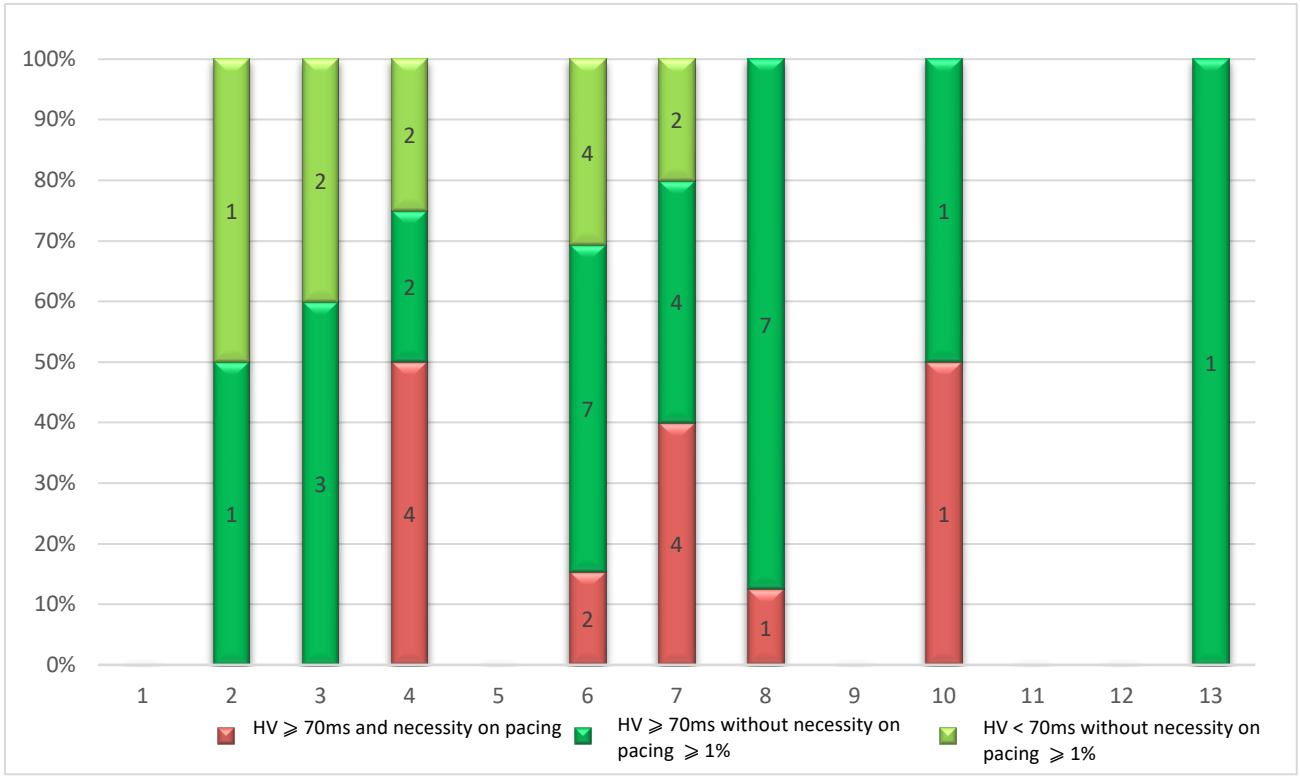

Figure 3. Electrophysiological study results according to exam day

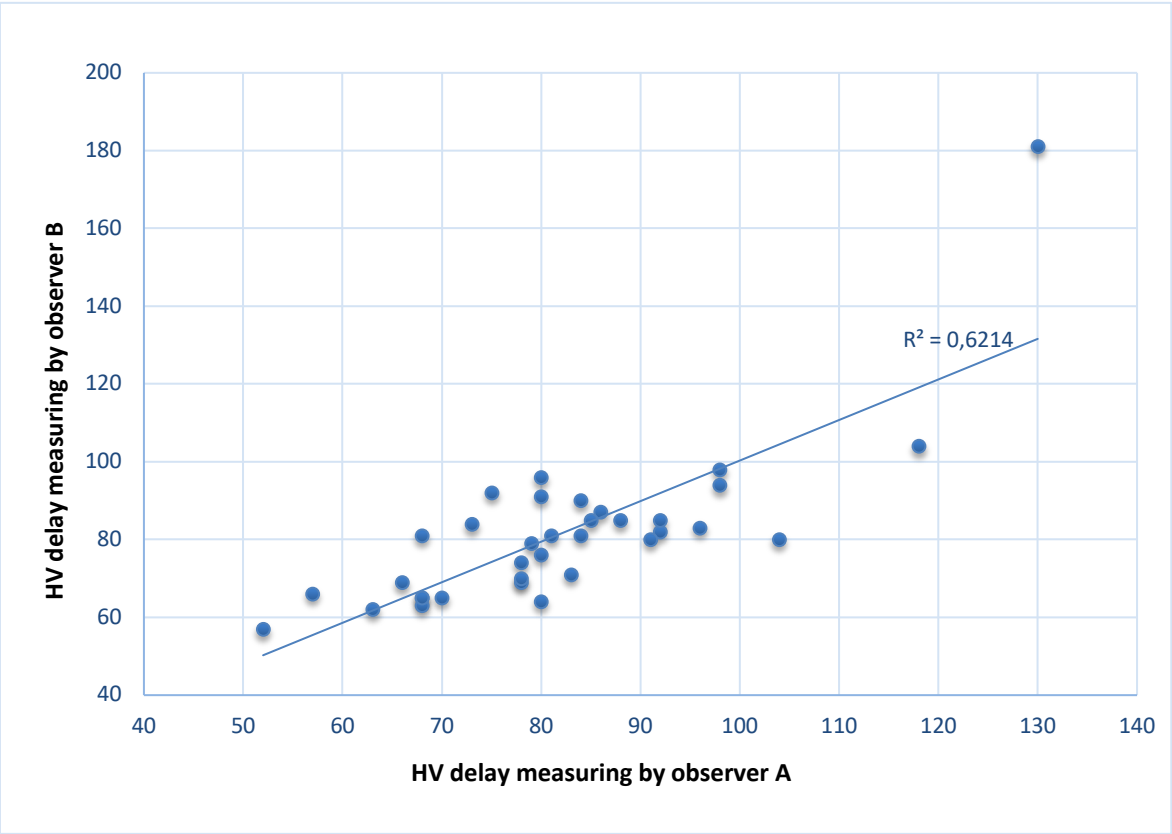

Figure 4. *Inter-observer variability in HV delay measurement*

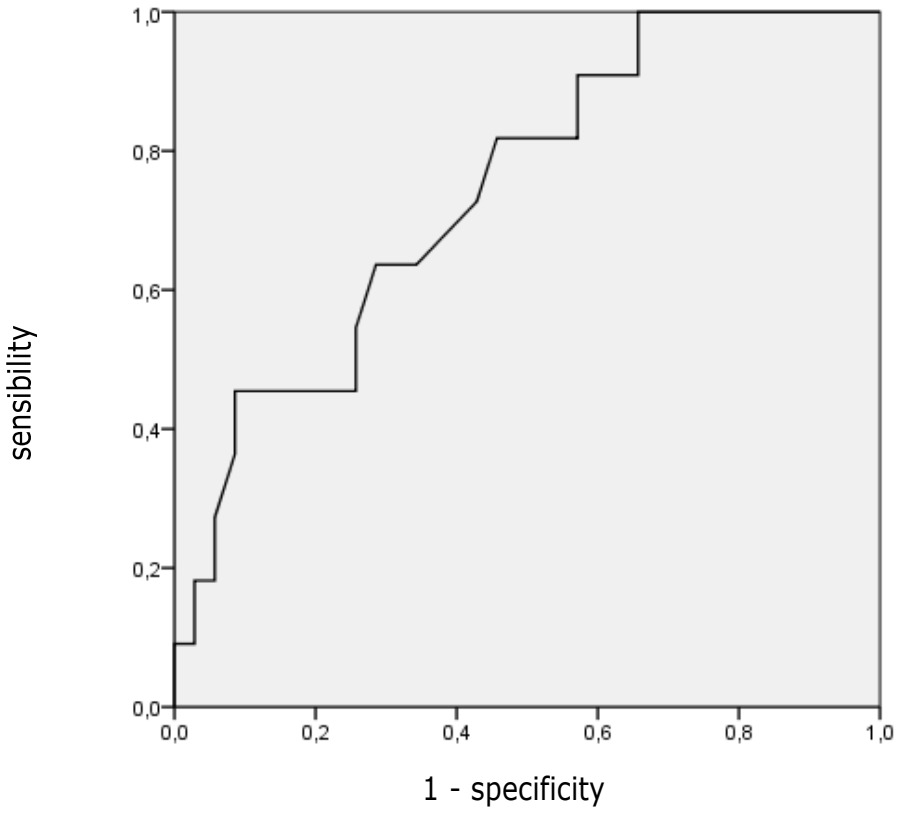

Figure 5. Receiver-Operating characteristic (ROC) Curves for HV delay duration and necessity of pacing⩾ 1%

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Table 1. Baseline and periprocedural characteristics of the study population

Values are presented as n (%) or mean ± standard derivation. Necessity for pacing is defined by ventricular stimulation ⩾ 1% at one year on the pacemaker interrogation.

	Necessity on pacing <1% ***N=37***	**Necessity on pacing ⩾ 1%** ***N=12***	**p Value**
Age (years)	81,4 ± 7,4	81,9 ±5,5	0.935
Male (gender)	16 (43.2%)	4 (33.3%)	0.738
Body Mass Index (kg/m²)	26,6 ± 4,8	25,2 ± 4,3	0.222
Arterial hypertension	25 (67.6%)	11 (91.7%)	0.142
Diabetes	10 (27.0%)	3 (25.0%)	1.000
Clearance (mL/min/1,73m²)	83,5 ± 33,6	62.1 ± 35	0.080
Logistic Euroscore (%)	9,5 ± 7,2	8,7 ± 4,4	0.718
Left Ventricular Ejection Fraction (%)	57,2 ± 9,7	63,8 ± 8,8	0.027
Mean aortic valve gradient (mmHg)	47,9 ± 9,6	48,1 ± 7,9	0.584
Indexed valve area (cm²/m²)	0.43 ± 0.07	0.43 ± 0.12	0.977
Beta blocker	18 (48,6%)	4 (33,3%)	0.865
Type valve *Sapien 3* *Corevalve Evolut R* *Corevalve Evolut Pro*	 24 (64.9%) 6 (16.2%) 7 (18.9%)	 8 (66.7%) 4 (33.3%) 0 (0.00%)	0.193
HAVB during procedure	3 (8.11%)	0 (0.00%)	0.566
Post TAVI pacemaker during hospitalization	21 (56.8%)	12 (100%)	0.005
Day median EPS	6 [4 ;7]	6,5 [4 ;7]	

Table 2. Indications and results of electrophysiological study

	Necessity on pacing <1% ***N=37***	**Necessity on pacing ⩾ 1%** ***N=12***	**p Value**
EPS indication *LBBB + BAV 1* *LBBB + BAV 1 + HAVB paroxystic* *LBBB + Right bundle brunch block* *LBBV and beta blocker indication* *LBBB + slow arrythmia* *LBBB de novo + BAV 1+ left deviation* *LBBB de novo + syncope*	 30 (81.1%) 1 (2.70%) 0 (0.00%) 1 (2.70%) 3 (8.11%) 1 (2.70%) 1 (2.70%)	 10 (83.3%) 1 (8.33%) 1 (8.33%) 0 (0.00%) 0 (0.00%) 0 (0.00%) 0 (0.00%)	0.521
Average HV delay (ms)	77,3 ± 14,9	92,3 ± 17,9	0.024
HV delays ⩾ 70ms	26 (70.3%)	12 (100%)	0.045

Table 3. Indications for pacemaker implantations during hospitalization

	Necessity on pacing <1% ***N=37***	**Necessity on pacing ⩾ 1%** ***N=12***	**Total** ***N= 49***
PM implantation during the initial hospitalization	21 (56,8%)	12 (100%)	33 (67,3%)
Post TAVI PM Indication: *HAVB* *BAV1 + LBBB* *LBBB + HV⩾ 70ms*	 3 (8,1%) 1 (2,7%) 16 (43,2%)	 1 (8,3%) 0 11 (91,7%)	 4 (8,2%) 1 (2%) 28 (57,1%)

Table 4. Univariate and multivariate predictors of necessity of pacing ⩾ 1%

	Univariate OR (95% CI)	**p value**	**Multivariate OR (95% CI)**	**p value**
Age			1,02 [0,84;1,25]	0,78
Male gender			1,73 [0,25;11,83]	0,57
Diabetes			0,43 [0,03;6,3]	0,54
Sapien valve			0,499 [0,06;4,1]	0,51
PR duration increment pr 10ms J2			0,9 [0,70;1,15]	0,40
QRS duration increment pr 10ms J2			0,87 [0,56;1,33]	0,52
HAVB during TAVI procedure			<0,01 [+∞;-∞]	1
10ms increase in the HV delay	1,66 [1.04 ;2.65]	0,03	2,37 [0,86;6,51]	0,09

APPENDIX

1. Test parameter

	HV < 70ms	HV ⩾ 70ms	**Total**
Necessity on pacing ⩾ 1%	False negative 0	True positive 12	12
Necessity on pacing <1%	True negative 11	False positive 26	37
Total	11	38	Total : 49

Specificity = True negative / (True negative + False positive) : 29,7%

Sensibility = True positive / (True positive + False negative) : 100 %

RUIZ GARANCE

PREDICTIVE ROLE OF INTRACARDIAQUE ELECTROPHYSIOLOGICAL STUDY AFTER TRANSCATHETER AORTIC VALVE IMPLANTATION

ABSTRACT

Background: Low-grade conduction complications after transcatheter aortic valve implantation (TAVI) represent the most frequent complication. It is essential to discriminate between patients who will require a pacemaker and, at the same time, to safely exclude other patients. The ESC 2021 guidelines propose electrophysiological exploration study to distinguish these patients, with a Level C of evidence.

Objective: The aim of the study is to investigate the predictive value of electrophysiology study in patients with low-grade conduction disorders after TAVI.

Methods and results: This is a single-center retrospective study that included 49 patients who underwent TAVI and subsequently had electrophysiological exploration for the onset or worsening of bundle-branch block. The primary endpoint was defined as ventricular pacing exceeding 1% at one year. At the one-year mark, twelve patients (24%) required more than 1% ventricular stimulation, indicating electrophysiology study 's sensitivity of 100%, but it demonstrated a specificity of 30%. Additionally, 8,2% of patients experienced a traumatic high-grade conductive disorder secondary to electrophysiology study.

Conclusion: In our study, electrophysiology study was able to identify patients who would not require ventricular pacing. However, due to its low specificity, electrophysiology study may encourage the erroneous implantation of pacemakers in patients who will not require ventricular pacing.

Keywords: Bundle branch block, TAVI, electrophysiology study ,pacemaker, high-grade conduction disorder.

RÔLE PREDICTIF DE L'EXPLORATION ELECTROPHYSIOLOGIQUE APRES L'IMPLANTATION TRANSCATHETER D'UNE VALVE AORTIQUE

RÉSUMÉ

Introduction : Les troubles de la conduction de bas grade après une implantation de valve aortique transcathéter (TAVI) représentent la complication la plus fréquente. Il est essentiel de discriminer les patients qui auront besoin d'un stimulateur cardiaque et, en même temps, d'exclure en toute sécurité les autres patients. Les recommandations de l'ESC 2021 proposent l'exploration électrophysiologique (EEP) afin de distinguer ces patients avec un niveau de preuve de grade C.

Objectifs : Étudier la valeur prédictive de l'étude électrophysiologique chez les patients présentant des troubles de la conduction de bas grade dans les suites d'une procédure TAVI.

Méthode et résultats : Il s'agit d'une étude mono centrique rétrospective incluant 49 patients ayant bénéficié d'une TAVI puis d'une EEP pour l'apparition ou l'aggravation d'un bloc de branche. Le critère de jugement principal est défini par une stimulation ventriculaire ⩾1% à un an. Douze patients (soit 24%) ont présenté une stimulation ventriculaire ⩾ à 1% à un an, permettant ainsi de calculer une sensibilité de l'EEP à 100% et une spécificité de 30%. Un trouble conductif de haut grade traumatique secondaire à l'EEP a eu lieu pour 8,2% des patients.

Conclusion : Dans notre étude, l'EEP permettait d'identifier les patients qui ne nécessiteront pas de stimulation ventriculaire. En revanche, en raison de sa faible spécificité, l'EEP risque d'encourager l'implantation de pacemaker à tort chez des patient qui ne nécessiteront pas de stimulation ventriculaire.

Mots clés : Bloc de branche, TAVI, exploration électrophysiologique, stimulateur cardiaque, trouble de la conduction de haut grade.

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