

Projets scientifiques sur HEAR concretisation et perspectives

Dr Amira Zaroui

Centre de Références des Amyloses Cardiaques,
CHU Henri Mondor

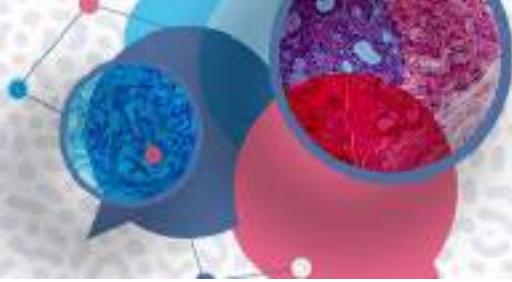


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ÉVÉNEMENT HYBRIDE



Jeudi 18 décembre 2025
Fondation Biermans-Lapôtre ■ PARIS

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Liens d'intérêts

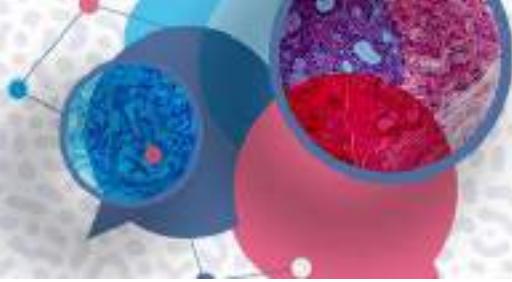
- Bayer
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R'EPOF

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EPON



Réant et al. *Orphanet Journal of Rare Diseases* <https://doi.org/10.1186/s13023-025-04062-y>

RESEARCH

Open Access



The Healthcare Amyloidosis European Registry (HEAR): design of a national registry with a European extension strategy, and foundation of the F-CRIN GRACE network

Patricia Réant^{1,2*}, Mounira Kharoubi^{2,3,4,5†}, Erwan Donal^{2,6}, Fabrice Bauer^{2,7}, Mélanie Bézard^{2,8,9}, Arnaud Bisson^{2,8,9}, Diane Bodez^{2,10}, Océane Bouchot^{2,11}, Eve Cariou^{2,12}, Philippe Charron^{2,13}, Jérôme Costa^{2,14}, Pierre-Yves Courand^{2,15}, Charlotte Daquinat^{2,16}, François Delelis^{2,17}, Antoine Jobbe Duval^{2,18}, Jean-Christophe Eicher^{2,19}, Antoine Fraix^{2,20}, Barnabas Gellen^{2,21}, Jean-Pierre Gueffet^{2,22}, Damien Guijarro^{2,23}, Gilbert Habib^{2,24}, Albert Hagège^{2,25,26,27}, Olivier Huttin^{2,28}, Arnaud Jaccard^{2,28}, Julien Jeanneteau^{2,29}, Damien Legallois^{2,29}, Damien Logeart^{2,28,31}, Lise Legrand^{2,32}, Jocelyn Inamo^{2,33}, Léa Marguerit^{2,23}, Raphaël Mirailles^{2,31,32}, Théo Pezel^{2,31,34}, Nicolas Piriou^{2,35}, François Roubille^{2,36}, Basile Mouhot^{2,37}, Romain Trésorier^{2,38}, Jean-Jacques Von Hunolstein^{2,39}, Charles Taieb^{2,4,40}, Muriel Salvat^{2,41}, Amira Zarou^{2,3,43}, Olivier Lairez^{2,11} and Thibaud Damy^{2,3,43,44}

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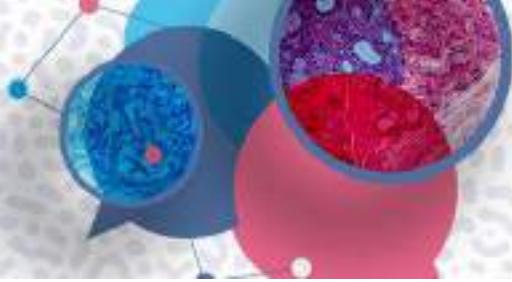


Table 1 Comparison of the HEAR with existing cardiac amyloidosis registries

Registry	THAOS	NAC Database	EURAMY	HEAR
Amyloidosis subtypes included	ATTR-only	All subtypes (ATTR, AL, others)	AL mainly	All subtypes (ATTR, AL, others)
Suspected cases included	No	No	No	Yes
PROMs collected	Optional/inconsistent	?	No	Yes (AmyloAFFECT-QOL, MLHFQ, KCCQ)
Centralized imaging	No	No	No	Yes (AI-based via MIRACL.ai)
PREMs collected	No	No	No	Planned (AI patient chatbot)
Linkage to national databases	No	No	No	Planned
Linkage to clinical research and trial networks	No	?	No	GRACE F-CRIN/E-CRIN
Governance	Industry-sponsored	Single-centre academic	Centre-dependent	Multicentre academic
Scalability and future strategy	Terminated	Will include several centres in UK	Terminated	European expansion

THAOS: Transthyretin Amyloidosis Outcomes Survey; NAC: National Amyloidosis Centre; EURAMY: Systemic Amyloidoses in Europe; HEAR: Healthcare Amyloidosis European Registry; ATTR: Transthyretin amyloidosis; AL: Light chain amyloidosis; PROM: MLHFQ: Minnesota Living Heart Failure Questionnaire; KCCQ: Kansas City Cardiomyopathy Questionnaire; PREM: patient-reported experience measures; MIRACL.ai: Multimodality Imaging for Research and Analysis Core Laboratory and Artificial Intelligence; AI: Artificial Intelligence; GRACE: Group for Research on Amyloidosis and Care Excellence; F-CRIN: French Clinical Research Infrastructure Network; E-CRIN: European Clinical Research Infrastructure Network



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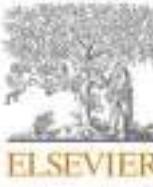


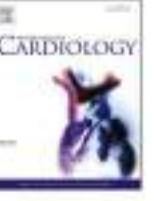
International Journal of Cardiology 437 (2025) 133522

Contents lists available at ScienceDirect

International Journal of Cardiology

journal homepage: www.elsevier.com/locate/ijcard

 ELSEVIER





Impact of Tafamidis on survival in elderly patients: Insights from the Healthcare European Amyloidosis Registry

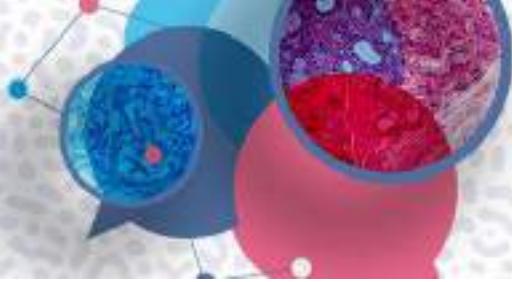
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Méthodes :

- Les données des deux groupes ont été extraites du **registre européen Healthcare European Amyloidosis Registry (HEAR)**.
- Un appariement par score de propension a été utilisé pour ajuster les différences basales entre les groupes.
- Les courbes de survie de Kaplan-Meier et des analyses de régression de Cox ont été appliquées pour évaluer la survie.

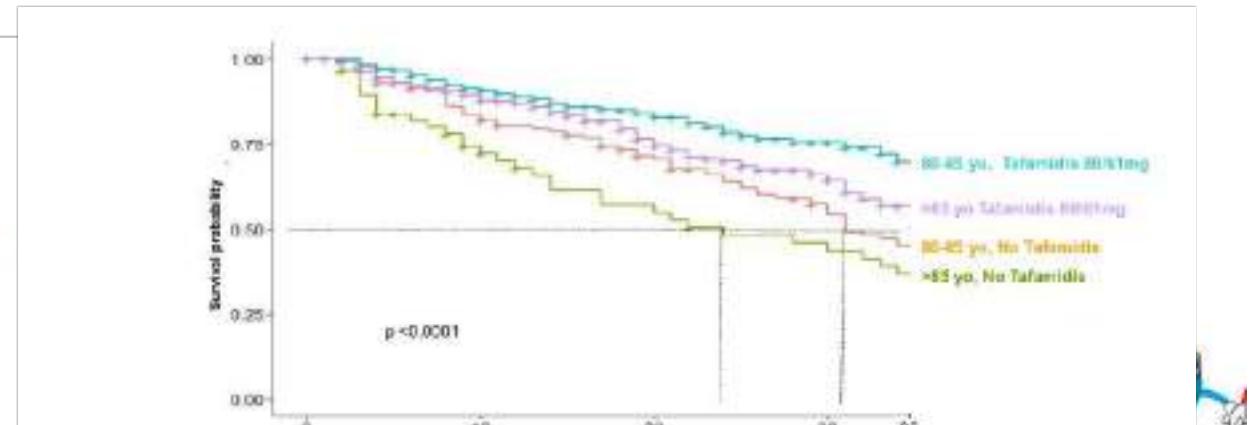
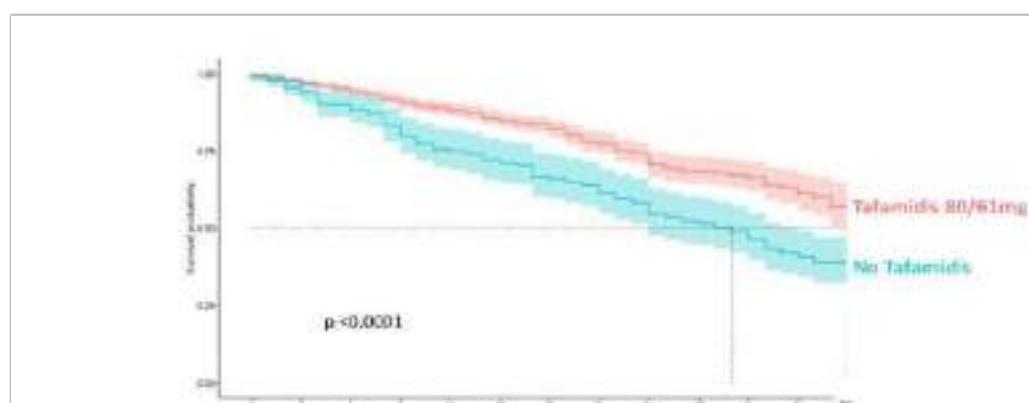


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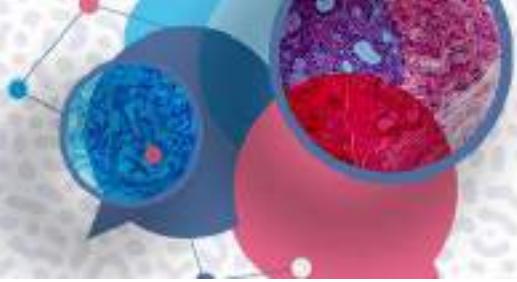
Résultats :

- Parmi 1380 patients, 1194 (âge >80ans) ont été traités par tafamidis 80/61 mg
- NT-proBNP était plus bas dans le groupe traité (2330 vs 4854 pg/ml, $p < 0,001$), tout comme la Troponine T HS (55 vs 74 ng/ml, $p < 0,001$)
- Le taux de survie à 3 ans était de 57 % chez les patients traités, contre 40 % chez les non traités. Dans le groupe traité, la survie à 3 ans atteignait 68 % chez les patients âgés de 80 à 85 ans et 58 % chez ceux de plus de 85 ans. Ces résultats ont été confirmés après ajustement par score de propension.



Conclusions :

Cette étude montre que le tafamidis procure un bénéfice significatif en termes de survie chez les patients âgés atteints d'ATTR-CM, y compris chez ceux de plus de 85 ans. Ces résultats soulignent l'importance d'un diagnostic et d'un traitement précoce.



> Eur Heart J. 2025 Aug 7:ehaf482. doi: 10.1093/eurheartj/ehaf482. Online ahead of print.

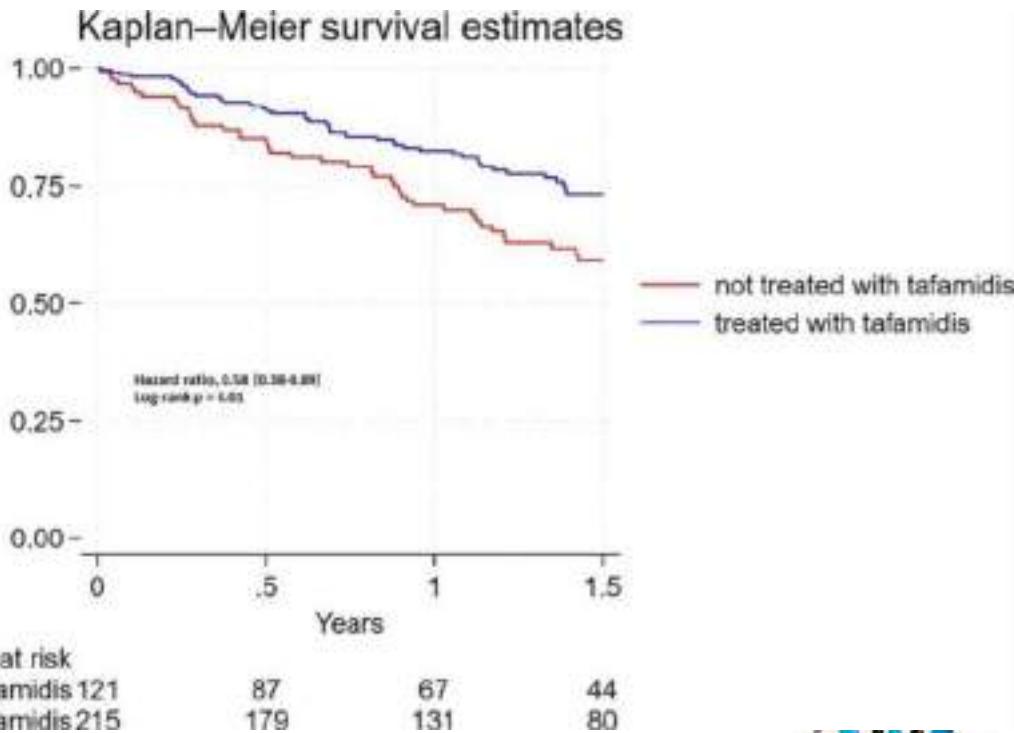
Nonagenarian patients with ATTR cardiac amyloidosis: should they be treated with tafamidis

Antoine Jobbé-Duval ¹, Thibaud Damy ^{2 3 4}, Amaury Broussier ^{4 5}

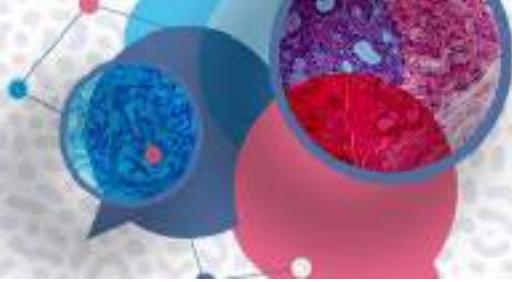
Affiliations + expand

PMID: 40795152 DOI: 10.1093/eurheartj/ehaf482

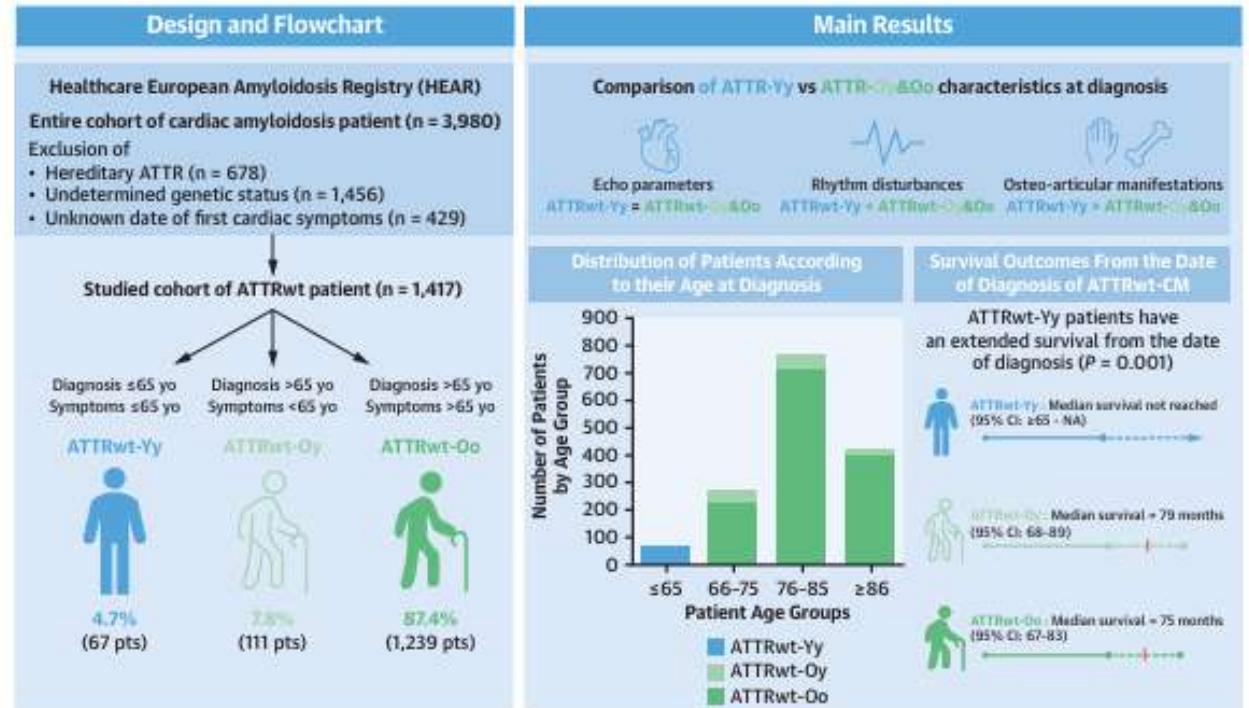
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CENTRAL ILLUSTRATION Characteristics and Prognosis of Wild-type Transthyretin Amyloid Cardiomyopathy
Patients Diagnosed Before 65 Years Old



Guiljarro D, et al. JACC Adv. 2025;4(12):102354.

Among 1,417 patients with ATTRwt-CM, 4.7% were diagnosed at \leq 65 years of age (ATTRwt-Yy group). These patients displayed distinct clinical characteristics and demonstrated longer survival after diagnosis compared with older patients. Abbreviations as in Figures 1 to 4.

ORIGINAL RESEARCH

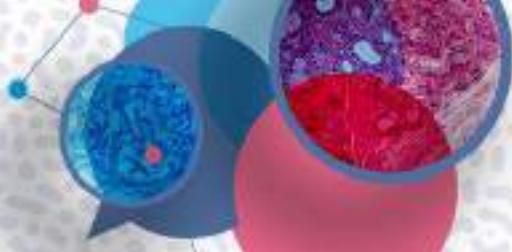
Characteristics and Prognosis of Wild-Type Transthyretin Amyloid Cardiomyopathy Patients Diagnosed Before 65 Years Old

Damen Guillermo, MD,¹ Jean-Christophe Eicher, MD,² Mélanie Bézard, PhD,^{1,2} Nicolas Pirou, MD,¹ François Sauer, MD,¹ François Roubille, MD, PhD,^{1,3} Jérôme Costa, MD,⁴ Patricia Réant, MD, PhD,¹ Erwan Bonal, MD, PhD,⁵ Fabrice Bauer, MD, PhD,⁶ Arnaud Bisson, MD, PhD,⁷ Delphine Bouchot, MD,⁸ Eve Caron, MD,⁹ Olivier Lainez, MD,¹⁰ Pierre-Yves Couraud, MD, PhD,¹¹ Charlotte Dagnan, MD,¹² Jean-Pierre Guéfrot, MD,¹³ Gilbert Habib, MD,¹⁴ Julien Jeanneteau, MD,¹⁵ Léa Marguet, MD,¹⁶ Silvia Cogina, MD,¹⁷ Romain Trézorier, MD,¹⁸ Mounira Khacoubi, PhD,¹⁹ Thibault Barry, MD, PhD,^{1,2}

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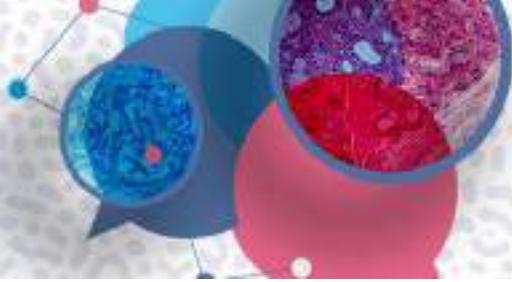


Etat d'avancements des projets HEAR (2024-2025)

Titre du projet	Investigateurs	Avancement
ATTRv Val122Ile vs ATTRwt	Pr Jocelyn Inamo Pr Thibaud Damy	➤ Analyses terminées ➤ Article en cours de rédaction
ATTRv Val122Ile femmes vs hommes	Pr Astrid Monfort Dr Amira Zaroui	➤ Articles en cours de corrections
ATTR iSGLT2	Pr Thibaud Damy Pr Patricia Réant	➤ Extraction des données terminées ➤ Analyses à débuter en janv 2026
ATTRv en cardiologie : Analyse du registre Français	Pr Gilbert Habib Dr Amira Zaroui	➤ Analyses en cours
ATTRwt femmes vs hommes	Dr Amira Zaroui Pr Patricia Réant Dr Charlotte Dagrenat	➤ Extraction des données terminées ➤ Analyses en cours
Ablation de FA Dans l'amylose ATTR	Dr Julien Jeanneteau	➤ Collecte des données d'ablation en cours



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ATTRv Val122Ile vs ATTRwt analyse du phenotype , du pronostique et de la réponse au traitement

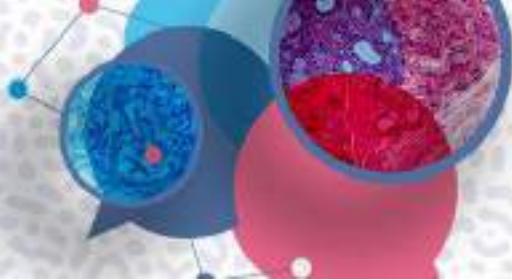


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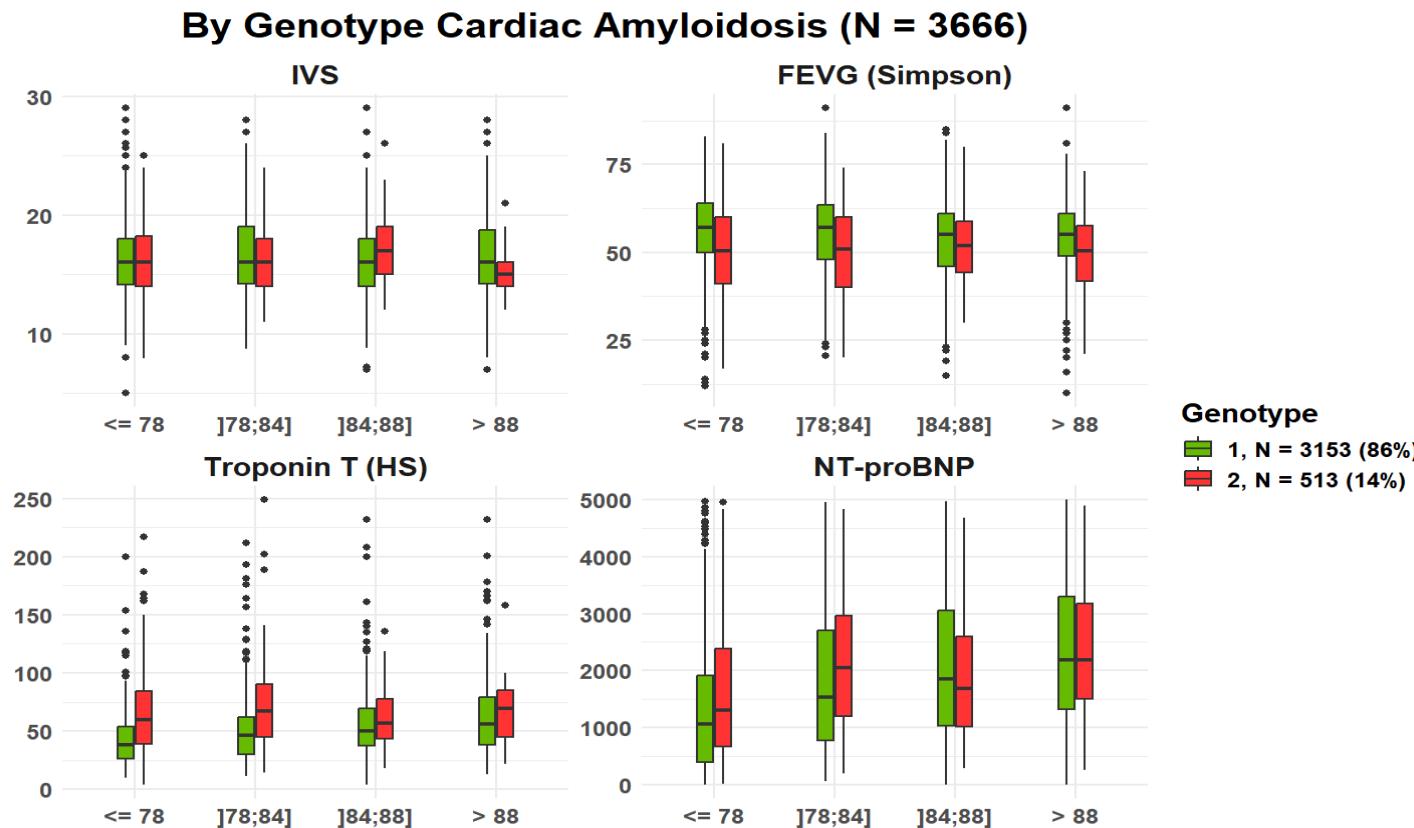


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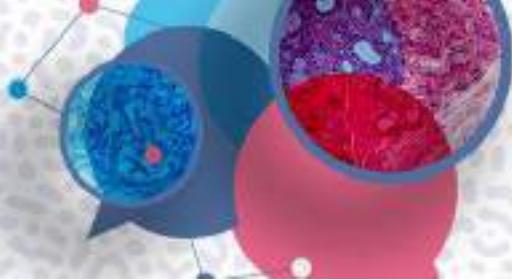




Résultats ATTRv Val122Ile vs ATTRwt :
analyse phenotype , pronostique et réponse au traitement (1)

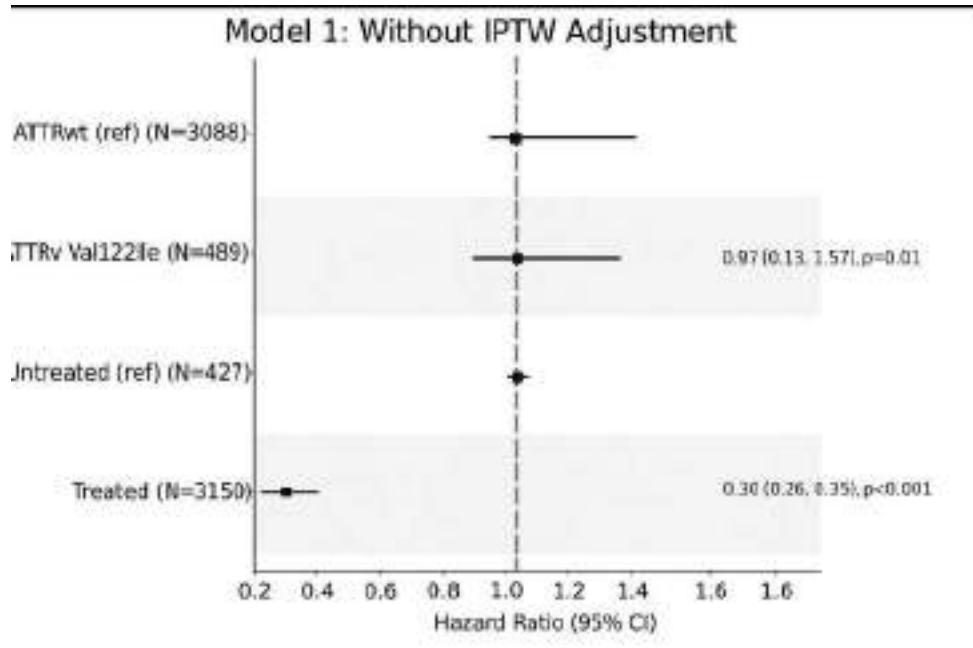


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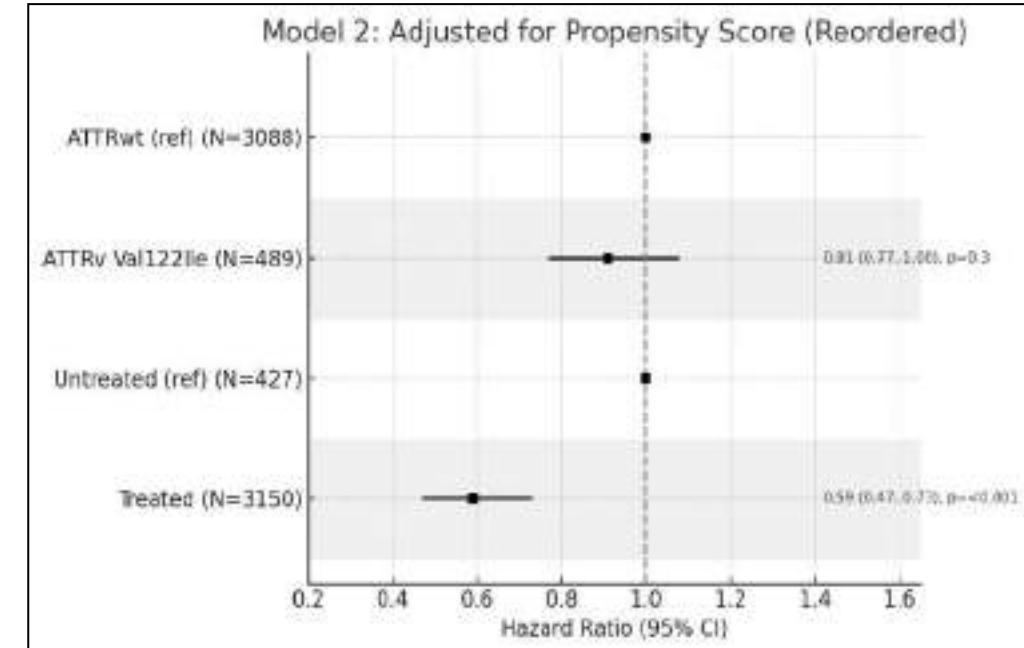


Cox analysis :

Forest plot de l'effet du traitement (adjusted à la date d'initiation du traitement) sur la survie globale selon un modèle de Cox ajusté sur le type : ATTRwt vs ATTRv Val122Ile



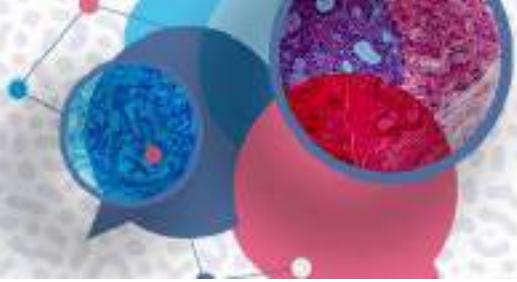
Modèle 1 –the multivariable Cox model evaluating all-cause mortality in patients with transthyretin amyloidosis (ATTR), genotype (wild-type vs. Val122Ile) was not significantly associated with survival (HR 0.97, 95% CI: 0.82–1.16, p = 0.8). In contrast, treatment was strongly associated with improved overall survival: treated patients had a 70% reduction in the risk of death compared to untreated patients (HR 0.30, 95% CI: 0.26–0.35, p < 0.001).



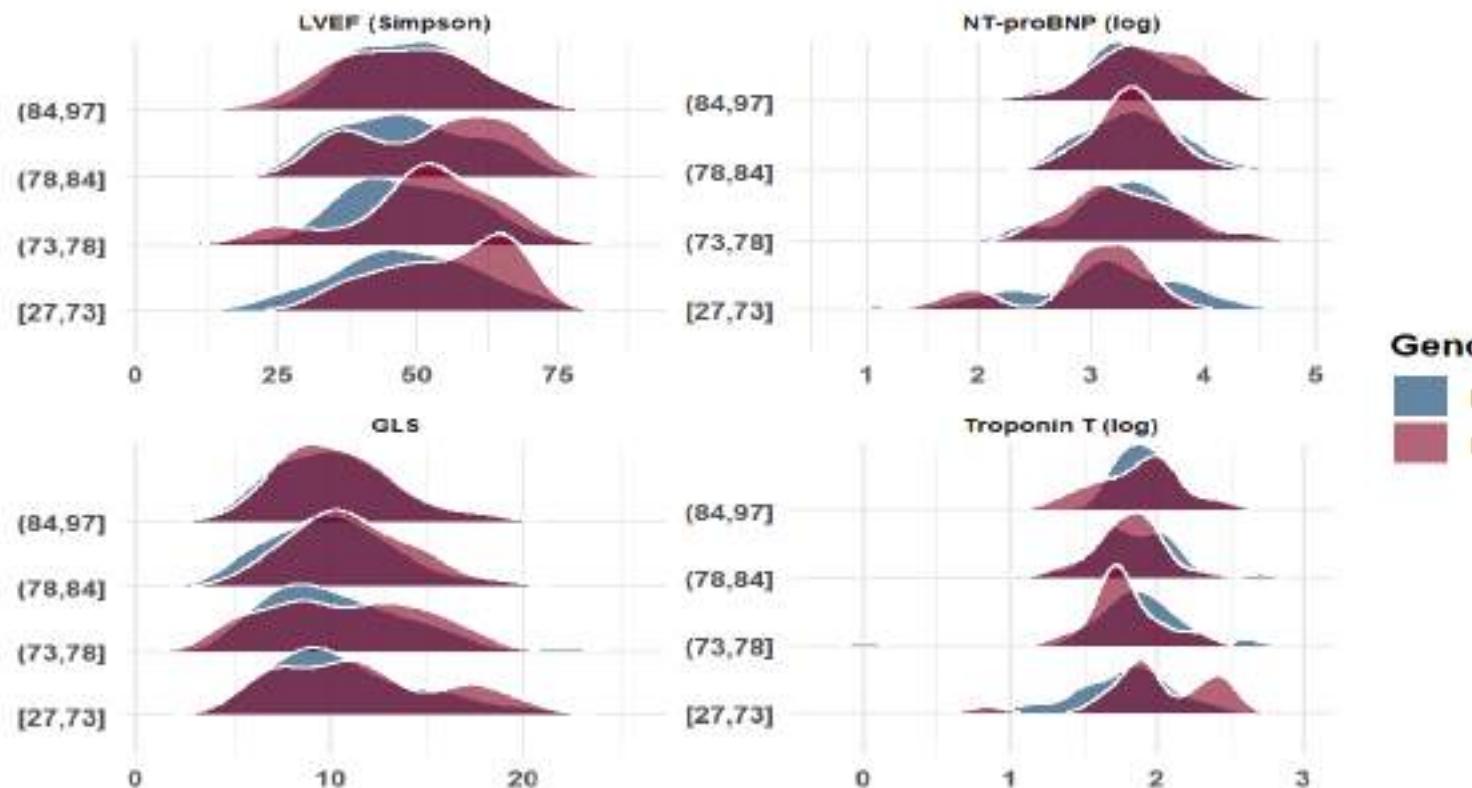
Modèle 2 –After adjustment for treatment propensity score, the survival benefit associated with treatment remained highly significant. The hazard ratio for mortality in treated patients compared to untreated patients was 0.30 (95% CI: 0.26–0.35, p < 0.001), confirming a robust association between treatment and reduced all-cause mortality, regardless of genotype. Genotype (ATTRwt vs. Val122Ile) remained non-significantly associated with survival (HR 0.97, 95% CI: 0.82–1.16, p = 0.8).



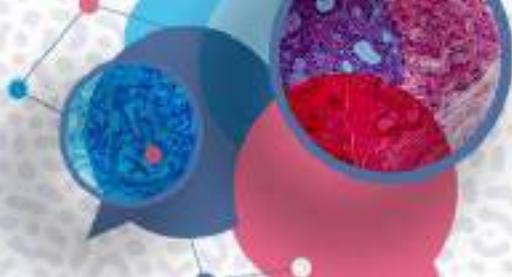
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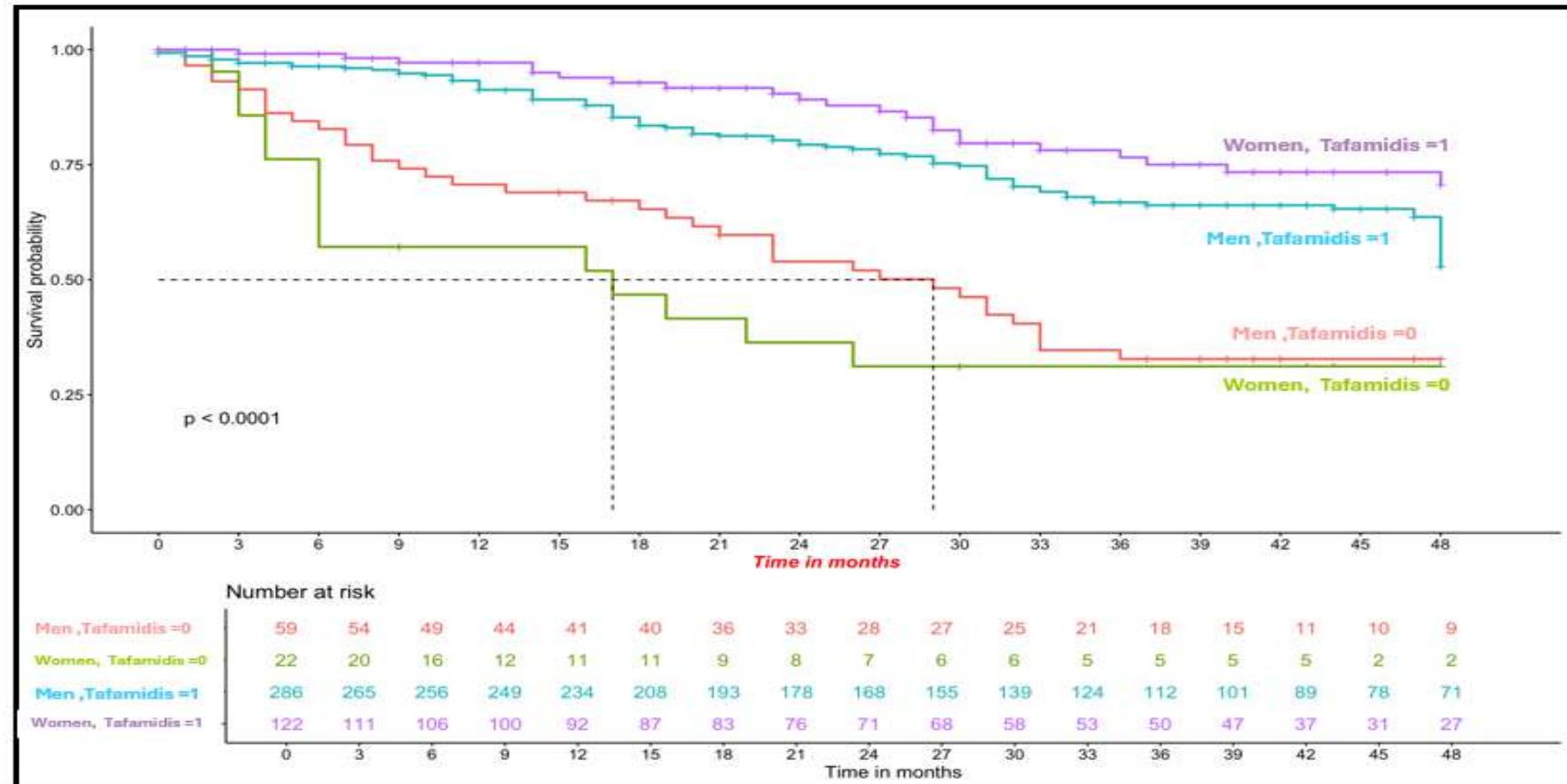
ATTRv Val122Ile femmes vs hommes



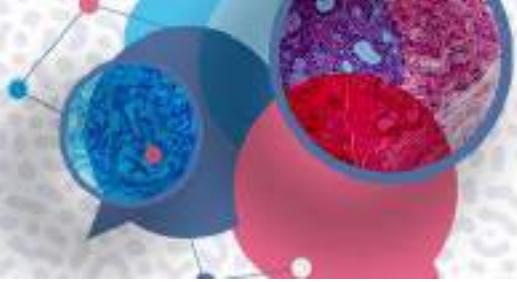
Distribution of Cardiac Parameters by Age Quartiles and Sex



Survie ATTRv Val122Ile hommes vs femmes traités et non traités

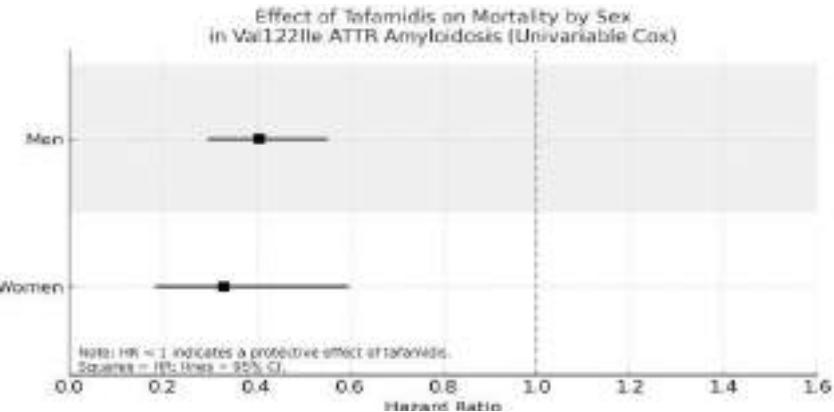


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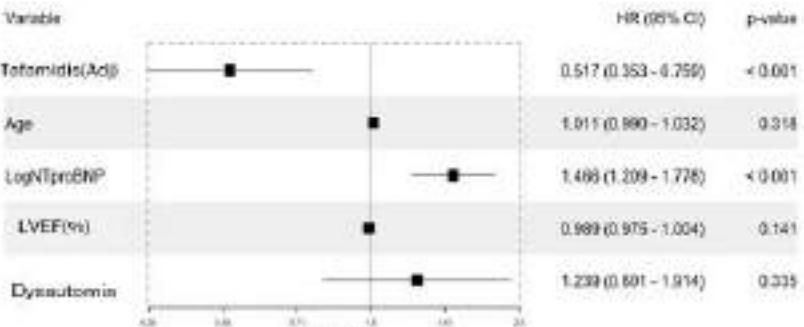


Cox analysis for tafamidis effect on all cause of mortality in Men and Women ²

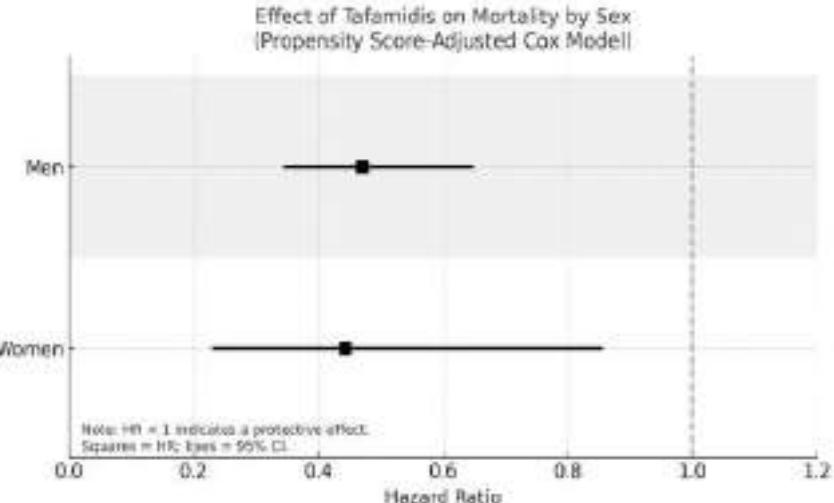
A/ Univariate analysis for men and women of Tafamidis treatment effect on mortality



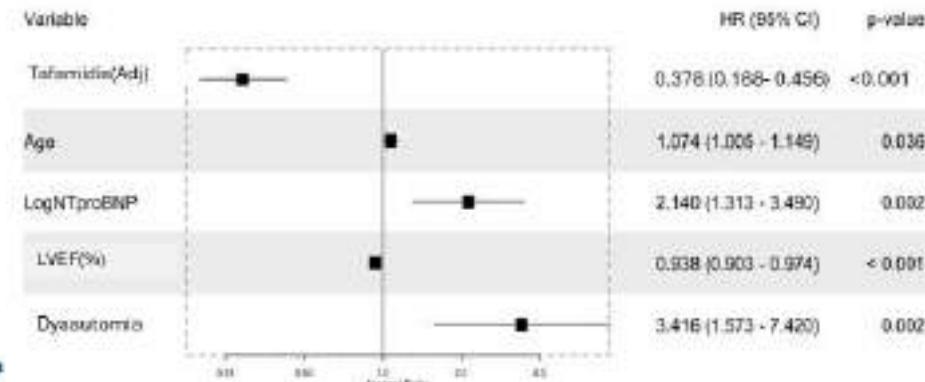
C / Cox analysis in men for treatment (tafamidis) adjusted by prognostic factors



B/ Multivariate analysis for men and women of Tafamidis treatment effect on mortality after adjustment by propensity score

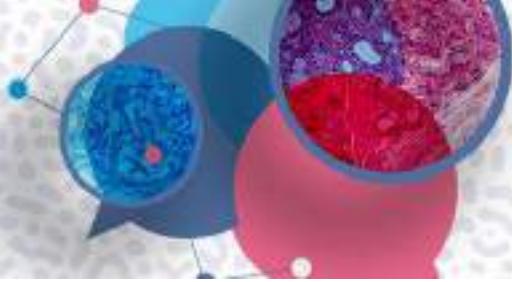


D/ Cox analysis in men for treatment (tafamidis) adjusted by prognostic factors



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ATTRv en France à partir du Registre National de l'Amylose (Heart-Registry)

Pr Gilbert Habib (CHU La Timone – Marseille) Dr Amira Zaroui (CHU Henri Mondor)

Objectif principal

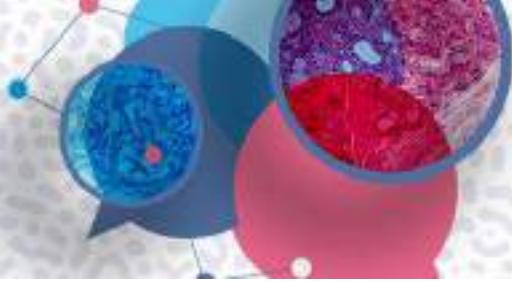
1. Décrire les caractéristiques cliniques, génétiques, phénotypiques et évolutives des patients atteints d'amylose héréditaire inclus dans le registre national de l'amylose en France.

Objectifs secondaires

1. Caractériser la distribution des mutations TTR et autres gènes impliqués, et leurs associations avec les phénotypes cardiaques, neurologiques ou mixtes.
2. Analyser les différences liées au sexe et à l'âge dans la présentation clinique et l'évolution.
3. Évaluer la survie globale et la survie sans événements cardiovasculaires majeurs (MACE : décès cardiovasculaire, hospitalisation pour insuffisance cardiaque, transplantation cardiaque).
4. Étudier l'histoire naturelle selon l'atteinte principale (cardiaque, neurologique, mixte) et la vitesse de progression.
5. Décrire l'utilisation et l'impact des traitements spécifiques (Tafamidis, silencers, transplantation) en vie réelle.
6. Explorer les déterminants prédictifs d'évolution défavorable (facteurs génétiques, biomarqueurs, imagerie).

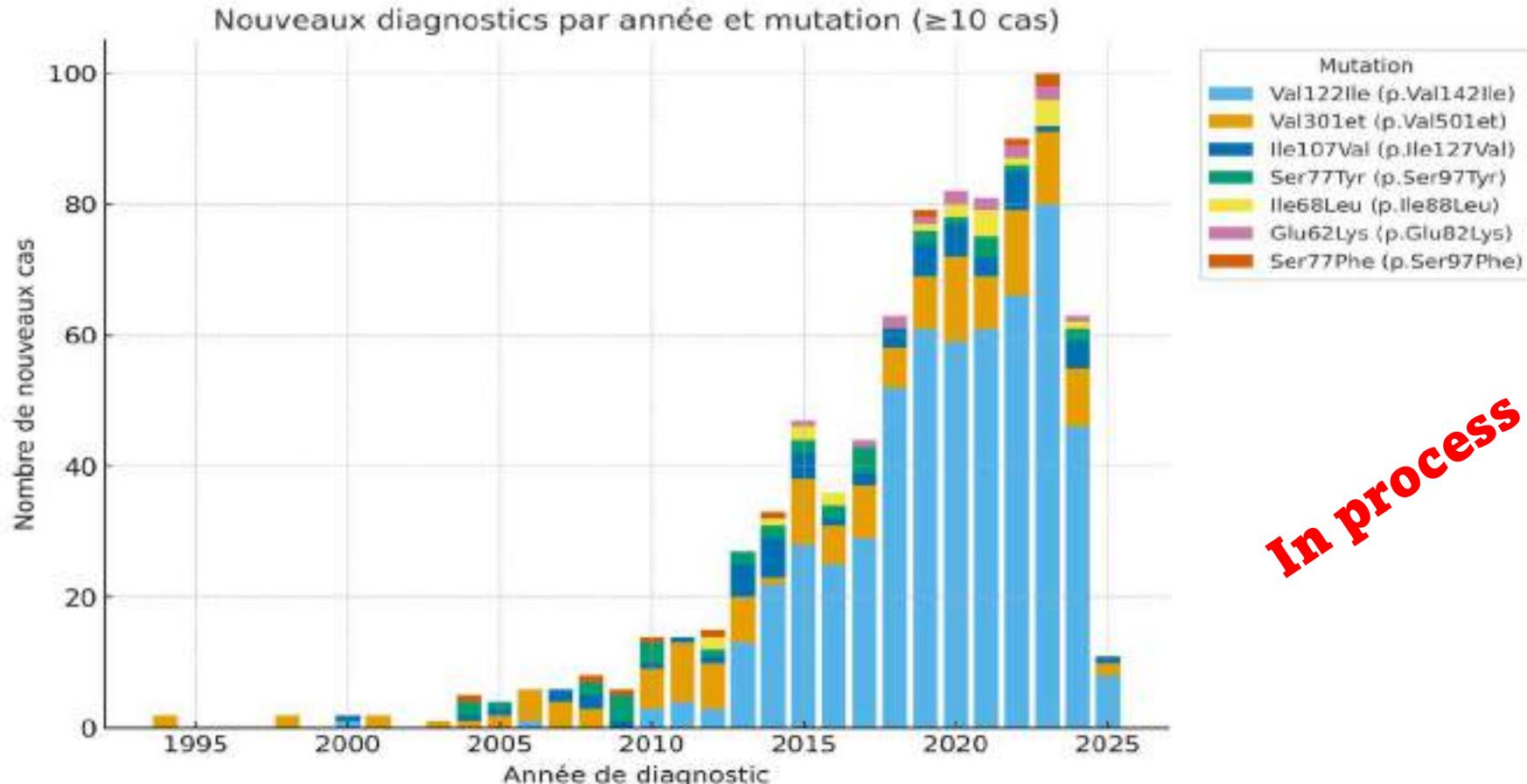


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ATTRv en France à partir du Registre National de l'Amylose (Hear Registry) (2)

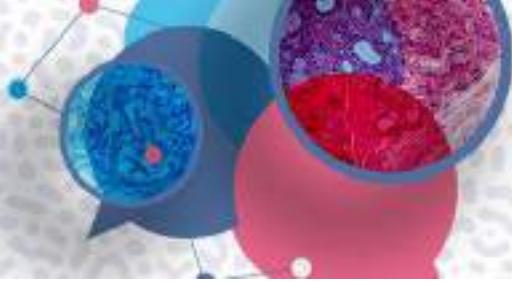
Pr Gilbert Habib (CHU La Timone – Marseille) Dr Amira Zaroui (CHU Henri Mondor)



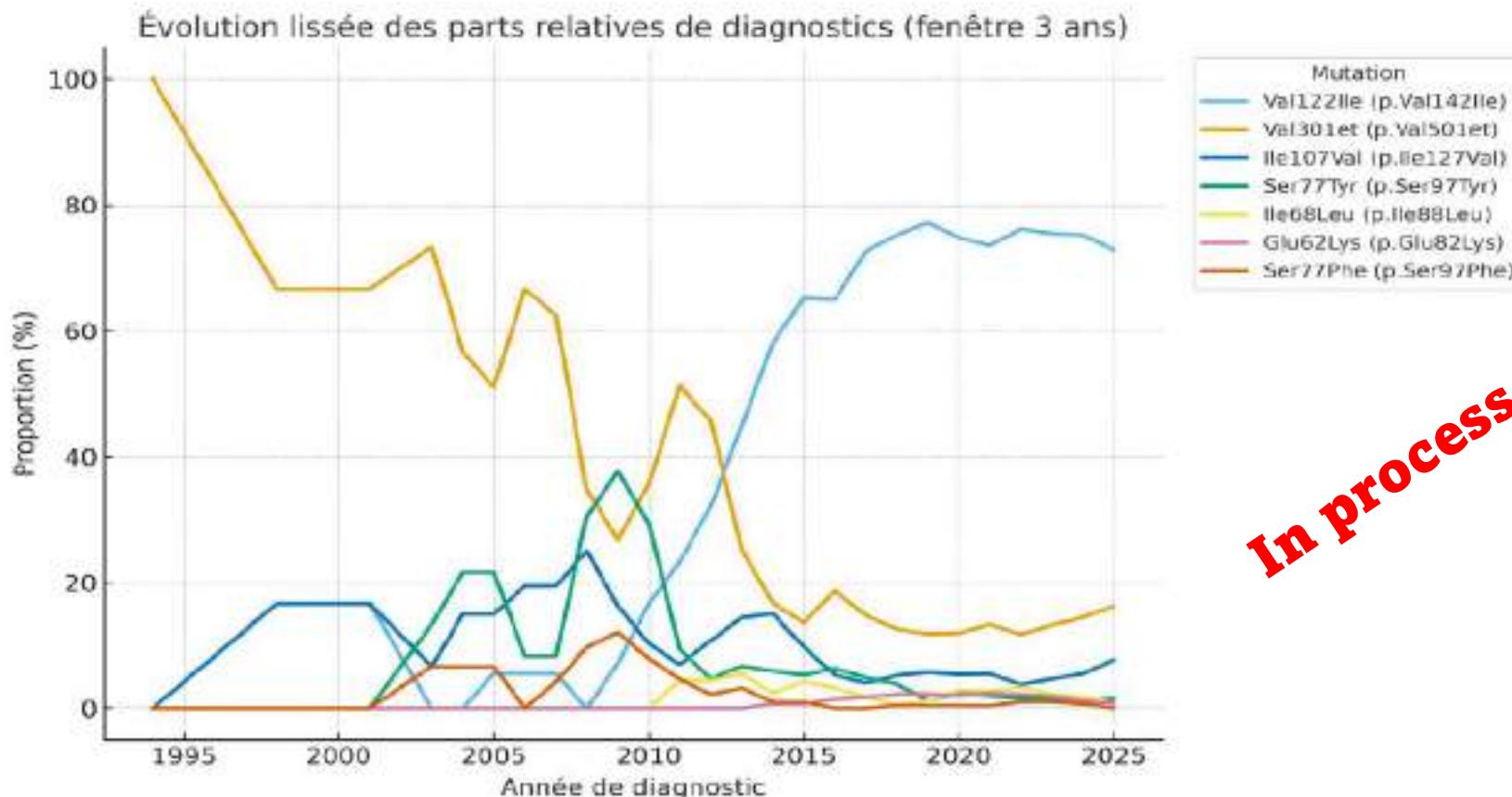
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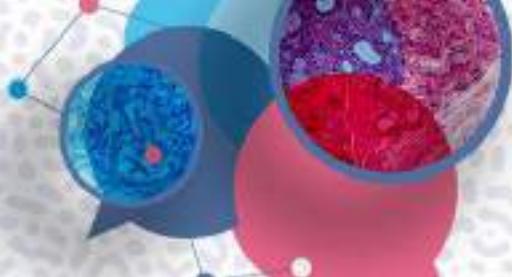
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ATTRv en France à partir du Registre National de l'Amylose (Hear Registry) (3)
Pr Gilbert Habib (CHU La Timone – Marseille) Dr Amira Zaroui (CHU Henri Mondor)

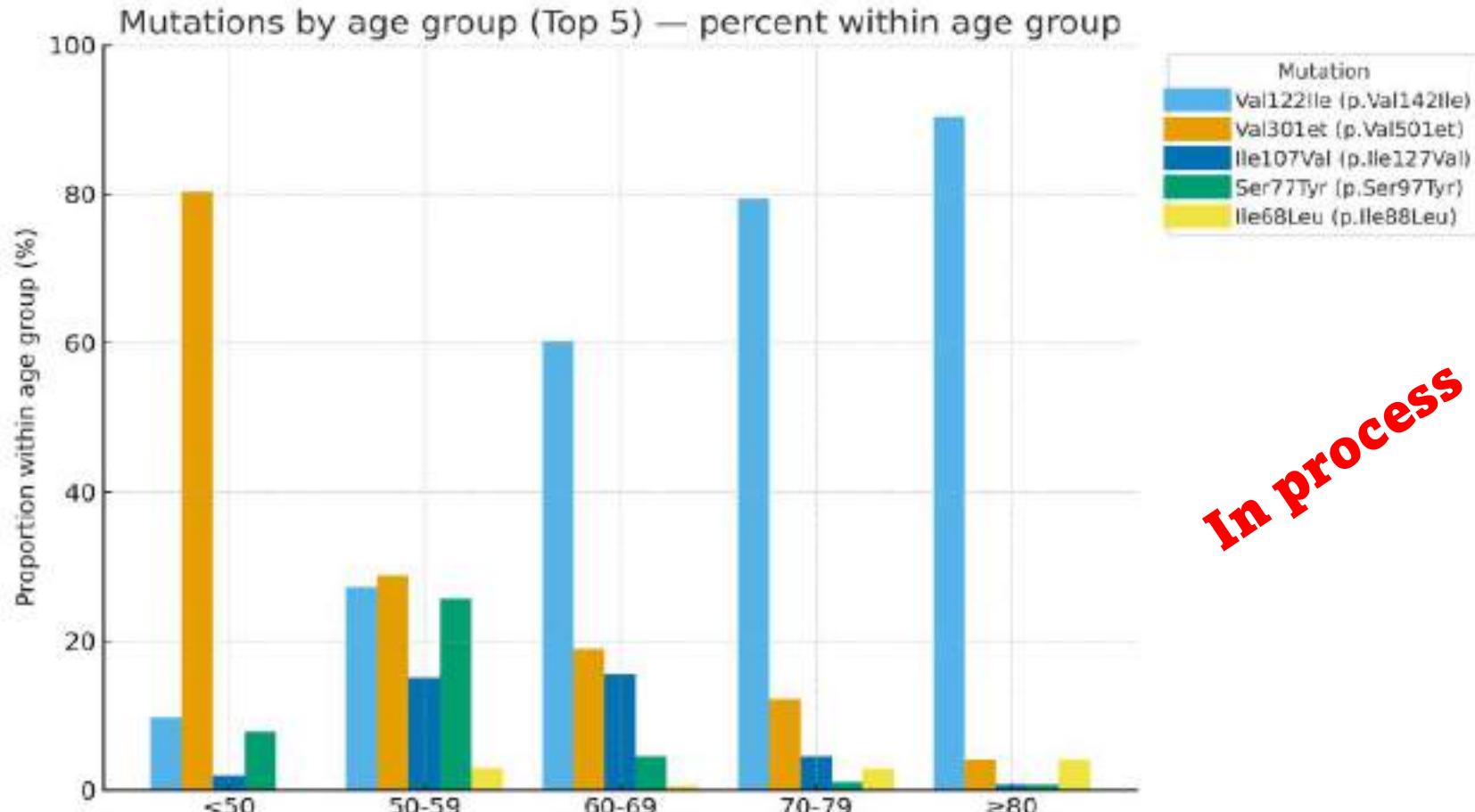


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ATTRv en France à partir du Registre National de l'Amylose (Hear Registry) (4)

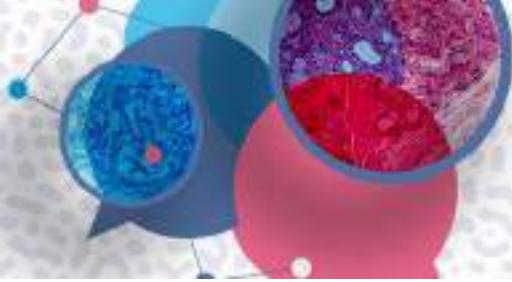
Pr Gilbert Habib (CHU La Timone – Marseille) Dr Amira Zaroui (CHU Henri Mondor)



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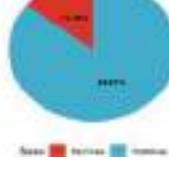
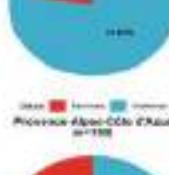
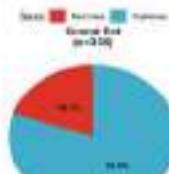
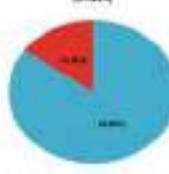
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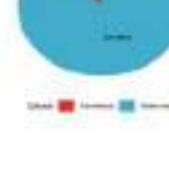
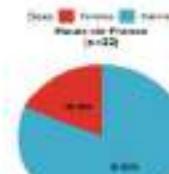
ATTRwt femmes (hommes vs femmes)

Dr Amira Zaroui (CHU Henri Mondor; Pr Patricia Réant (CHU Bprdeaux), Dr Charlotte Dagrenat (CH Haguenau)

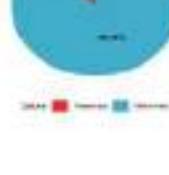
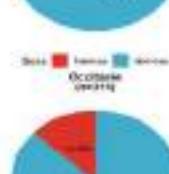
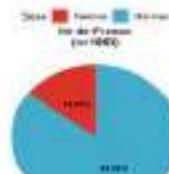
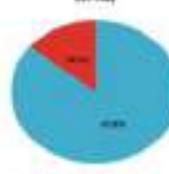
Asso Inter-Hôpitaux (n=212)



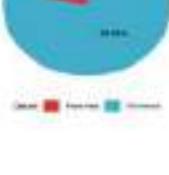
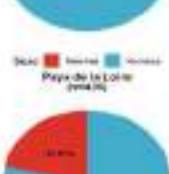
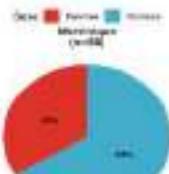
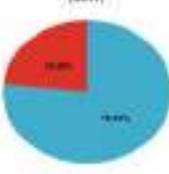
Alsace-Champagne-Ardenne-Lorraine (n=112)



Bretagne (n=112)



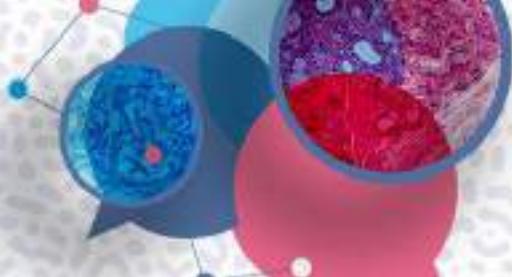
Centre-Val de Loire (n=77)



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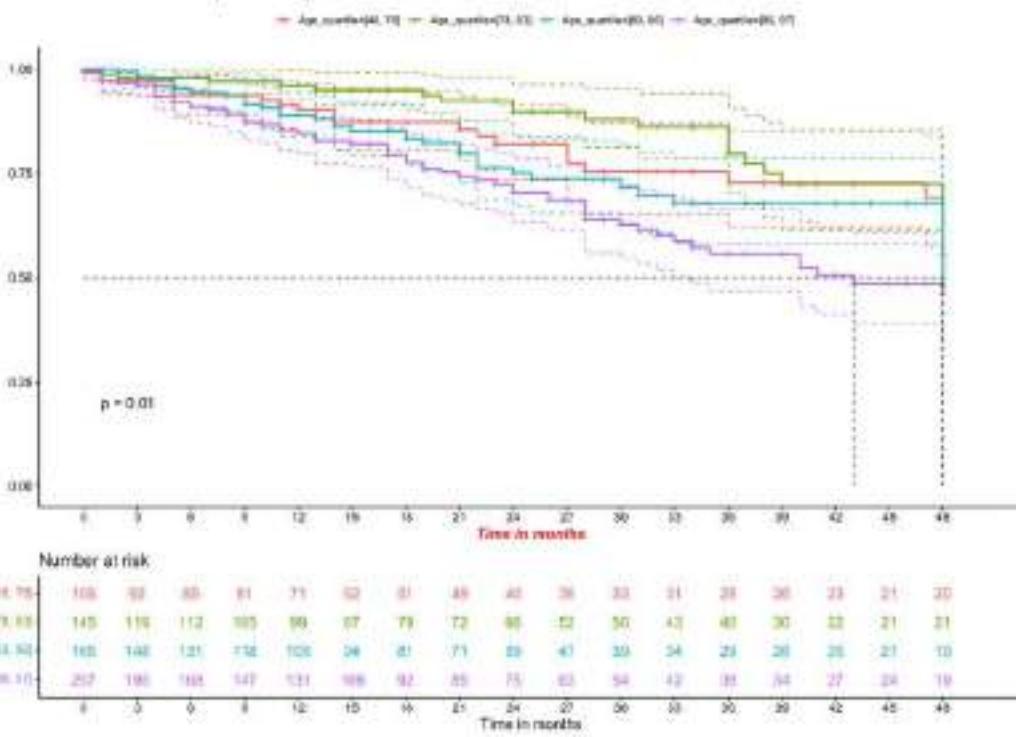
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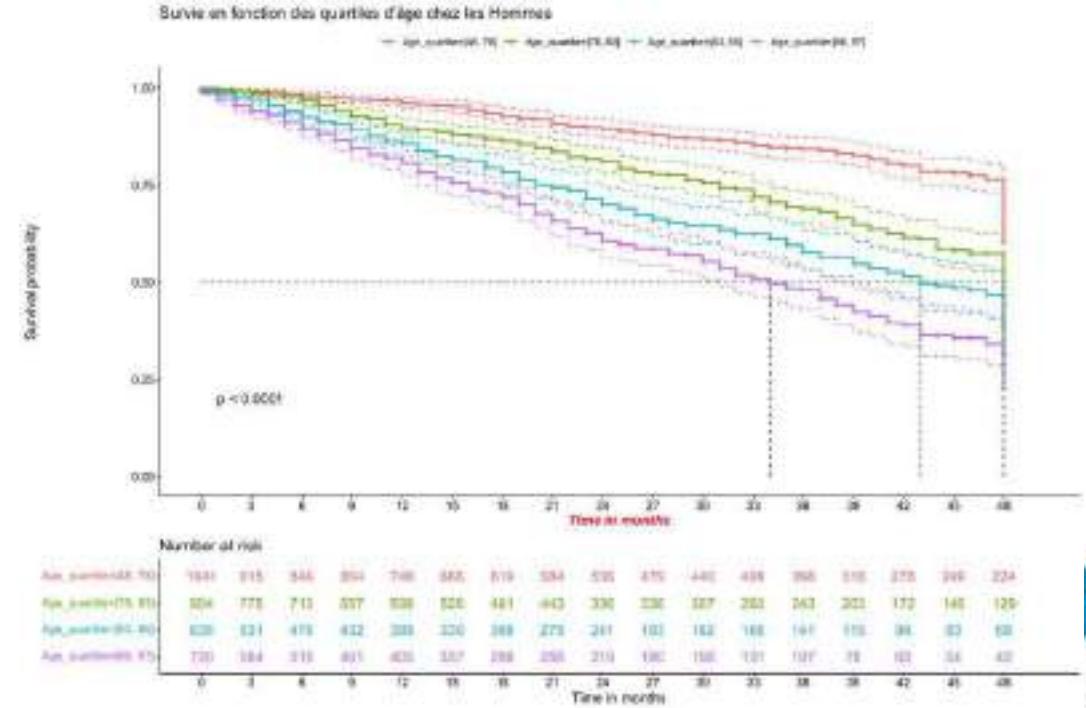
ATTRwt femmes (hommes vs femmes) (2)

Dr Amira Zaroui (CHU Henri Mondor; Pr Patricia Réant (CHU Bordeaux), Dr Charlotte Dagrenat (CH Haguenau)

Survie en fonction des quartiles d'âge chez les Femmes



Survie en fonction des quartiles d'âge chez les Hommes

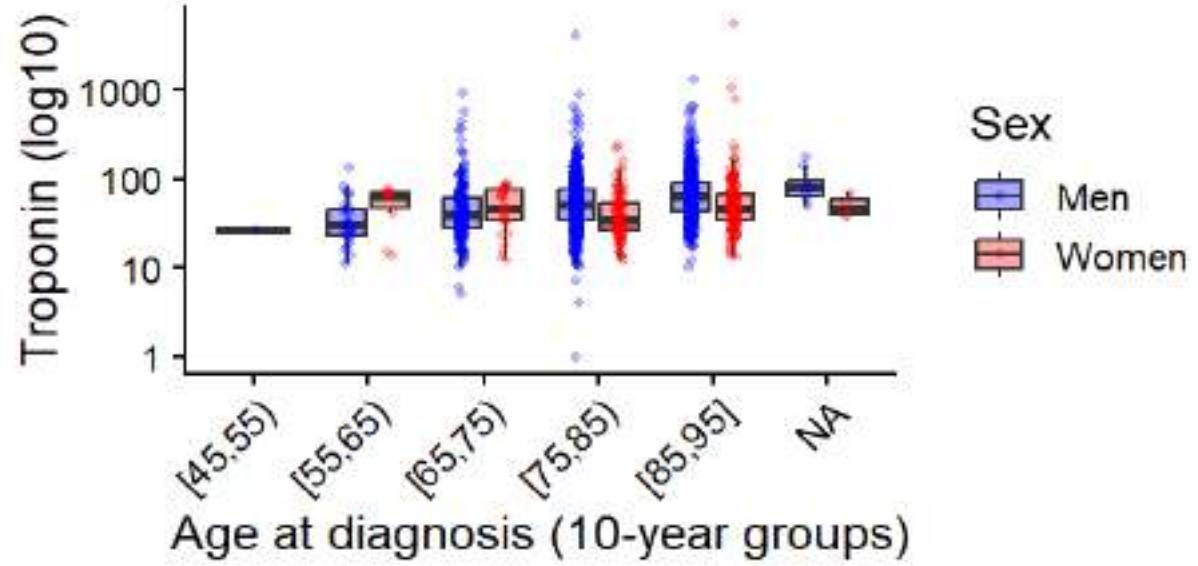




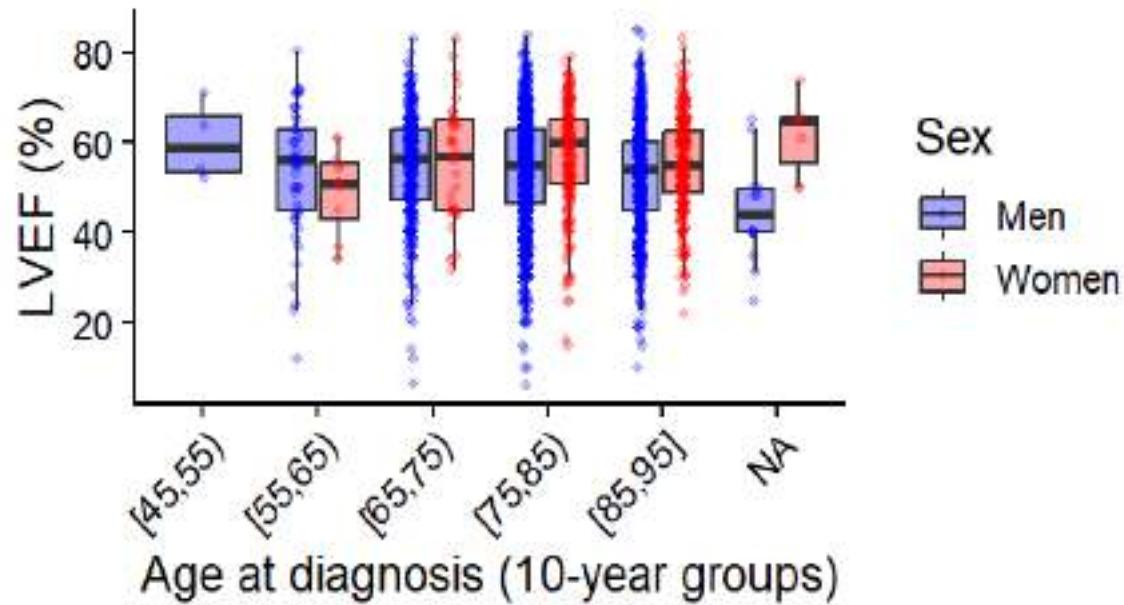
ATTRwt femmes (hommes vs femmes) (3)

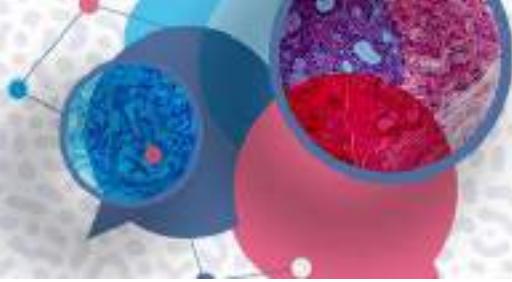
Dr Amira Zaroui (CHU Henri Mondor; Pr Patricia Réant (CHU Bordeaux), Dr Charlotte Dagrenat (CH Haguenau)

Troponin by 10-Year Age Groups



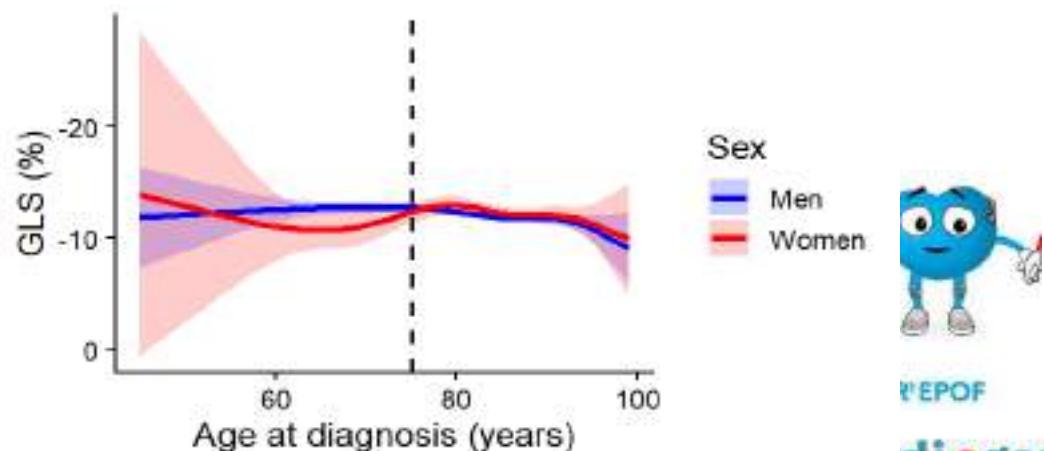
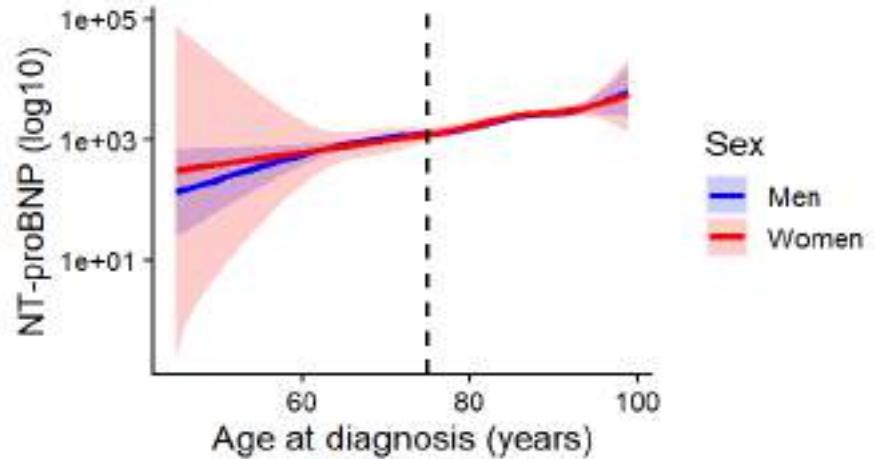
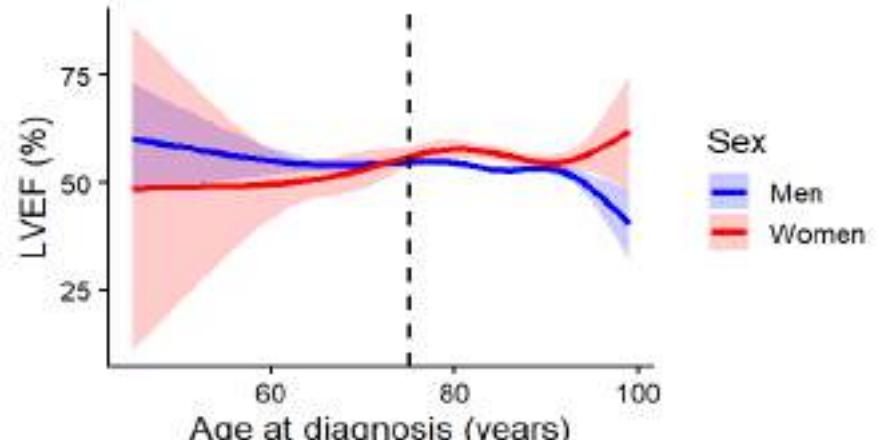
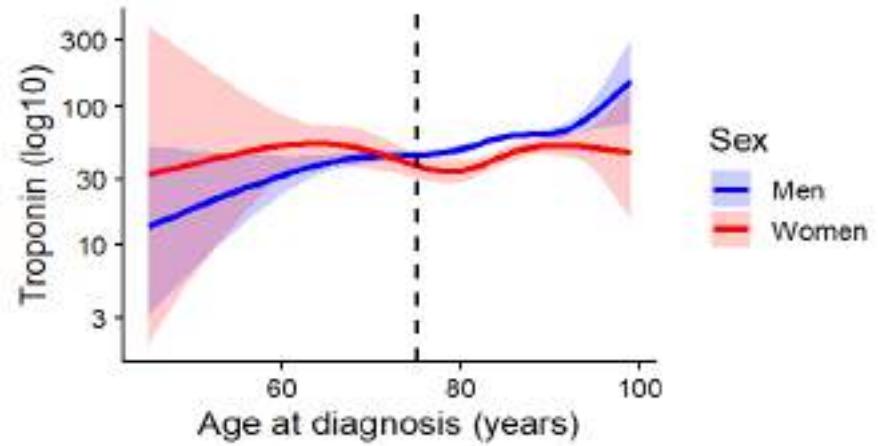
LVEF by 10-Year Age Groups





ATTRwt femmes (hommes vs femmes) (4)

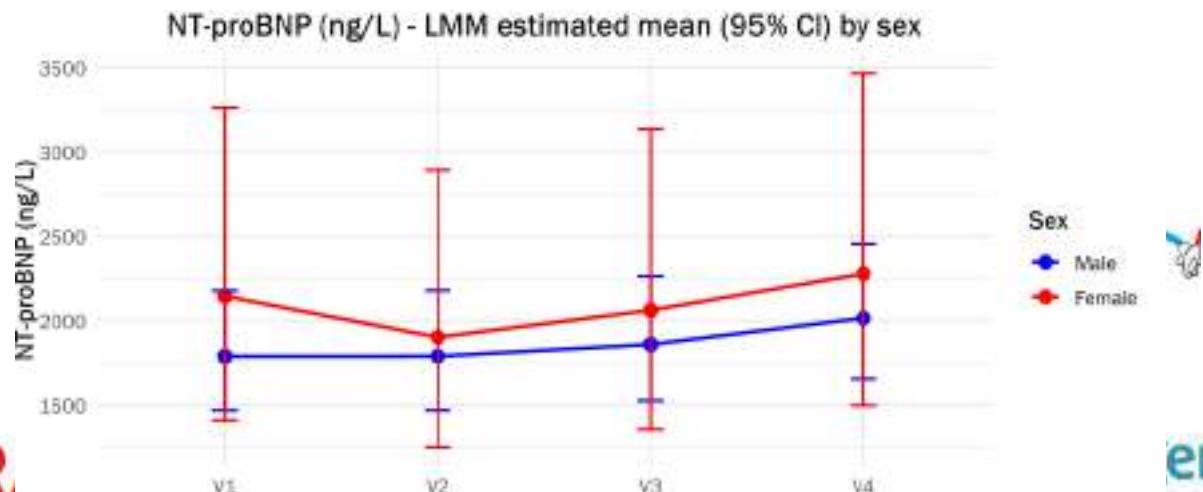
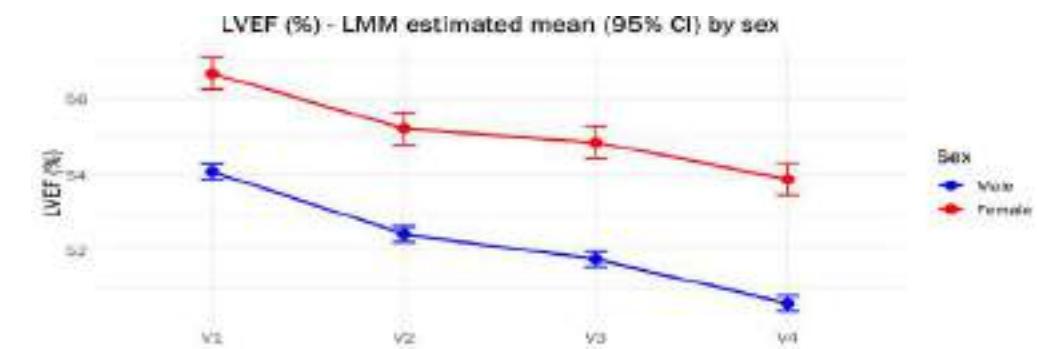
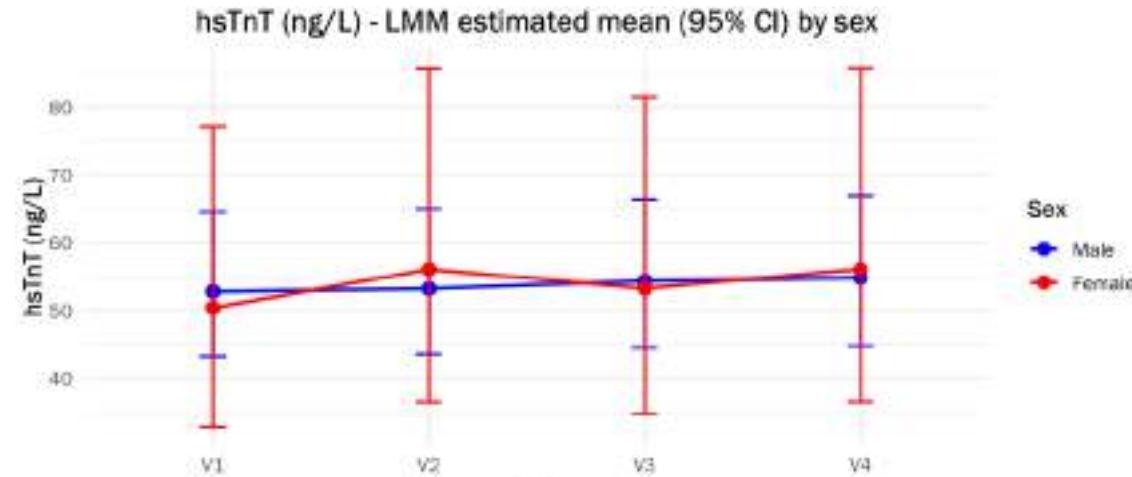
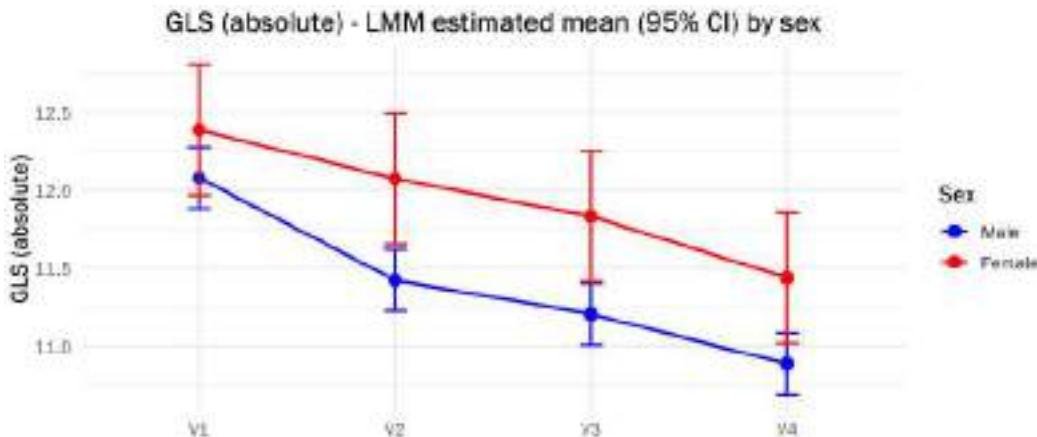
Dr Amira Zaroui (CHU Henri Mondor; Pr Patricia Réant (CHU Bordeaux), Dr Charlotte Dagrenat (CH Haguenau)



l'EPOF

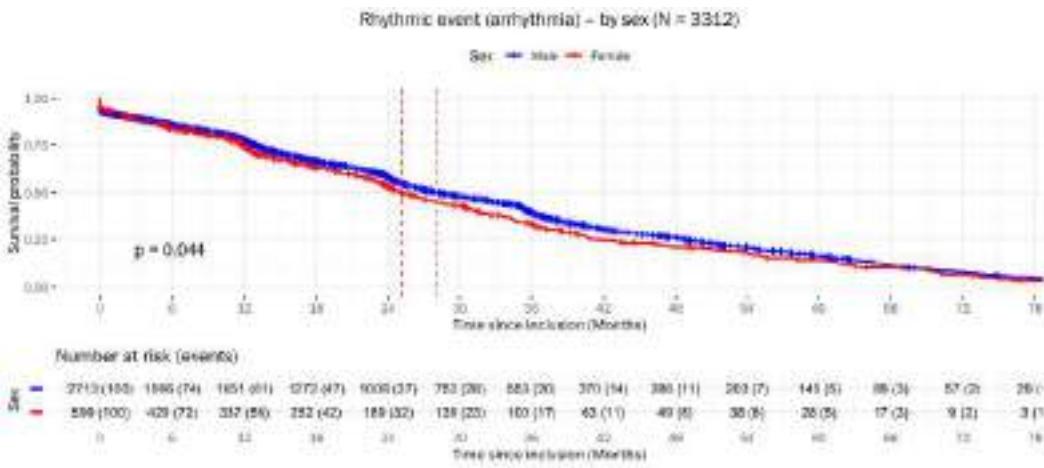
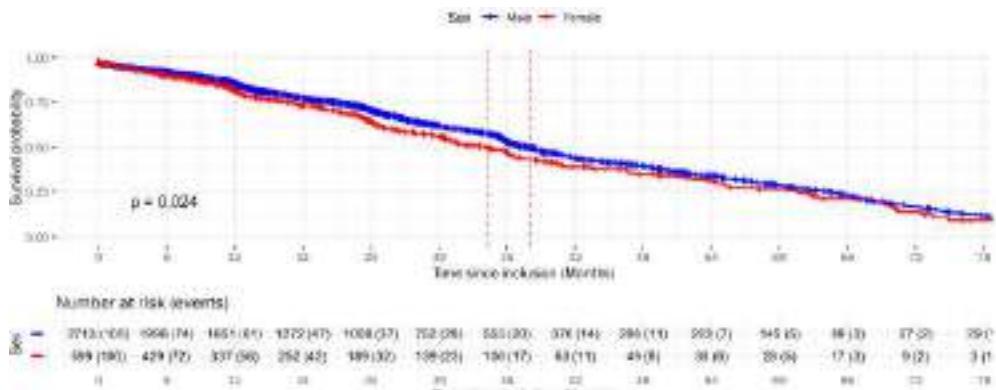


Evolution des marqueurs cardiaques

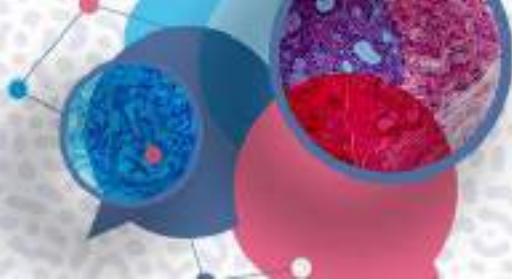




Evènements cardiovasculaires



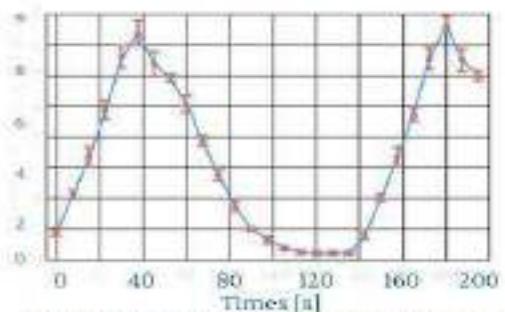
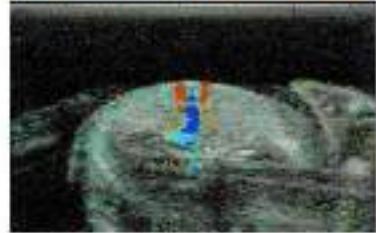
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Perspectives : Etude prospective nichée dans HEAR Rigidité myocardique Amyloscan 2

Shear wave elastography using acoustic radiation force

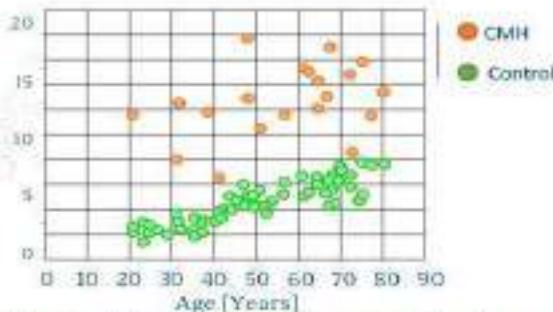
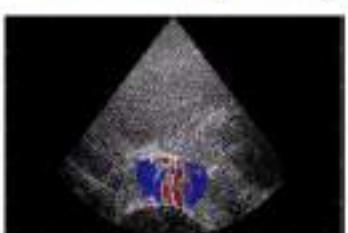
2D Model (Pre-clinical)



M. Perrot et al., « Real-time assessment of myocardial contractility using shear wave imaging », 2011

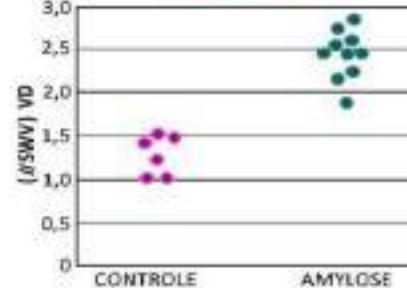
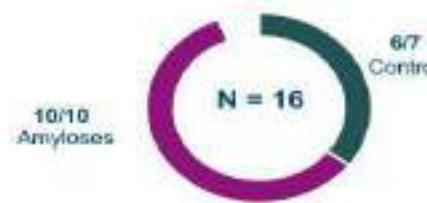
P. Song et al., « Quantitative Assessment of Left Ventricular Diastolic Stiffness Using Cardiac Shear Wave Elastography: A Pilot Study », 2016

2D Model (Clinic)



O. Villeneuve et al., « Myocardial Stiffness Evaluation Using Noninvasive Shear Wave Imaging in Healthy and Hypertrophic Cardiomyopathic Adults », 2018

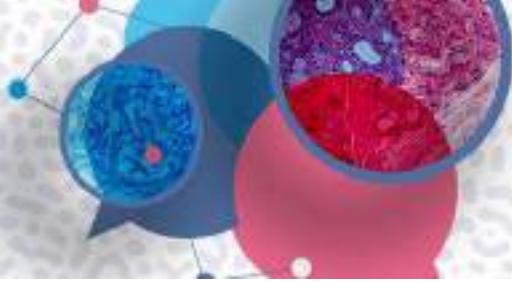
Multidirectional Model (Clinic)



O. Pedreira et al. (unpublished) 2022



R'EPOF



Perspectives : Etude prospective nichée dans HEAR

valeur pronostique de l'élastométrie hépatique dans
l'amylose cardiaque : Pr Olivier Lairez (CHU de Toulouse)

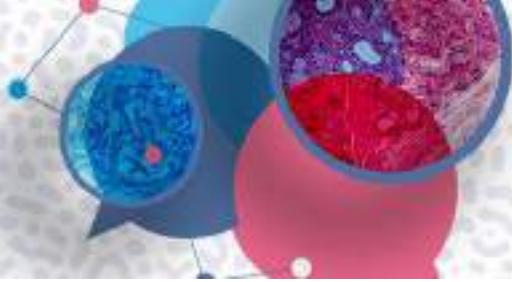


R'EPOF



Titre du projet	Investigateurs	Objectifs	Avancements
Amylo-Arrhythmias (ATTR)	Pr Donal (CHU Rennes) Dr L'Official (CHU Rennes)	Impact des arythmies auriculaires sur les caractéristiques et pronostic de l'ATTR	A débuter en 2026
Prévalence des troubles de la conduction dans l'ATTRwt apr rapport à une population témoin saine	Pr Lairez (CHU Toulouse) Dr Domain (CHU Orléans)	<ul style="list-style-type: none"> ➤ Évaluer la prévalence des troubles conductifs dans l'ATTRwt vs une population témoin saine du même âge ➤ Définir les types de troubles conductifs communs à l'ATTRwt. 	<ul style="list-style-type: none"> ➤ A débuter en 2026
Amylo-LBBAP : Stimulation de l'aire de la branche gauche dans l'amylose cardiaque	Pr Charles Guenancia (CHU Dijon)	<ul style="list-style-type: none"> ➤ Comparer l'efficacité et la tolérance à court et moyen terme de ma stimulation LBBAP vers VD standard et CRT chez les patients avec amylose cardiaque. 	<ul style="list-style-type: none"> ➤ Collecte de données en cours au CHU Dijon ➤ Etude de faisabilité dans les autres centres
Evaluation de la microcirculation coronaire par AMR(µFR) dans l'amylose cardiaque à transthyrétine : corrélation avec l'atteinte microvasculaire et le pronostic	Dr Guillaume Allan (CH Mâcon)	<ul style="list-style-type: none"> ➤ Évaluer si les patients avec amylose cardiaque présentent une microcirculation altérés mesurée par AMR. 	<ul style="list-style-type: none"> ➤ À présenter à la prochaine réunion des investigateurs de HEAR en janv 2026





Remerciements

Platinum sponsors



Silver sponsor



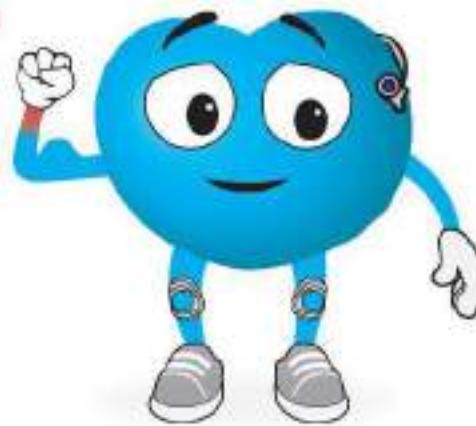
Journée organisée par :



Les atteintes rhumatologiques (synoviales) de l'amylose surviennent plusieurs années avant l'insuffisance cardiaque (EPOF)

R[®] EPOF

- Surdité
- Canal carpien
- Doigt à ressaut
- Rupture du tendon du long biceps
- Canal lombaire étroit
- Prothèse de hanche/genou
- Essoufflement
- Prise de poids
- Edèmes
- Fatigue



Et si c'était une
Amylose
Cardiaque à
transthyrétine ?



