



Année 2020/2021 N°

Thèse

Pour le

DOCTORAT EN MEDECINE

Diplôme d'État

par

Benjamin TURPIN

Né le 19 Octobre 1993 à Bourges 18

Patients âgés souffrant d'insuffisance cardiaque aiguë: parcours de soins hospitalier après prise en charge initiale au service des urgences.

Présentée et soutenue publiquement le 28 Juin 2021 devant un jury composé de :

Président du Jury : Professeur Saïd LARIBI, Médecine d'urgence, Faculté de Médecine -Tours

Membres du Jury

Professeur Laurent FAUCHIER, Cardiologie, Faculté de Médecine – Tours

Docteur Fanny POITAU, Gériatrie, CHU - Tours

Docteur Camille DEBACQ, Gériatrie, CHU - Tours

Directeur de thèse : Docteur Pierre DENEAU, Médecine d'urgence - Tours

UNIVERSITE DE TOURS
FACULTE DE MEDECINE DE TOURS

DOYEN
Pr Patrice DIOT

VICE-DOYEN
Pr Henri MARRET

ASSESSEURS
Pr Denis ANGOULVANT, *Pédagogie*
Pr Mathias BUCHLER, *Relations internationales*
Pr Theodora BEJAN-ANGOULVANT, *Moyens – relations avec l'Université*
Pr Clarisse DIBAO-DINA, *Médecine générale*
Pr François MAILLOT, *Formation Médicale Continue*
Pr Patrick VOUREH, *Recherche*

RESPONSABLE ADMINISTRATIVE
Mme Fanny BOBLETER

DOYENS HONORAIRES
Pr Emile ARON (†) – 1962-1966
Directeur de l'Ecole de Médecine - 1947-1962
Pr Georges DESBUQUOIS (†) – 1966-1972
Pr André GOUAZE (†) – 1972-1994
Pr Jean-Claude ROLLAND – 1994-2004
Pr Dominique PERROTIN – 2004-2014

PROFESSEURS EMERITES
Pr Daniel ALISON
Pr Gilles BODY
Pr Jacques CHANDENIER
Pr Alain CHANTEPIE
Pr Philippe COLOMBAT
Pr Etienne DANQUECHIN-DORVAL
Pr Pascal DUMONT
Pr Dominique GOGA
Pr Gérard LORETTE
Pr Dominique PERROTIN
Pr Roland QUENTIN

PROFESSEURS HONORAIRES
P. ANTHONIOZ – P. ARBEILLE – A. AUDURIER – A. AUTRET – P. BAGROS – P. BARDOS – C. BARTHELEMY – J.L. BAULIEU
– C. BERGER – JC. BESNARD – P. BEUTTER – C. BONNARD – P. BONNET – P. BOUGNOUX – P. BURDIN – L.
CASTELLANI – B. CHARBONNIER – P. CHOUTET – T. CONSTANS – P. COSNAY – C. COUET – L. DE LA LANDE DE CALAN
– J.P. FAUCHIER – F. FETISSOF – J. FUSCIARDI – P. GAILLARD – G. GINIES – A. GOUDEAU – J.L. GUILMOT – N. HUTEN
– M. JAN – J.P. LAMAGNERE – F. LAMISSE – Y. LANSON – O. LE FLOCH – Y. LEBRANCHU – E. LECA – P. LECOMTE –
AM. LEHR-DRYLEWICZ – E. LEMARIE – G. LEROY – M. MARCHAND – C. MAURAGE – C. MERCIER – J. MOLINE – C.
MORAINE – J.P. MUH – J. MURAT – H. NIVET – L. POURCELOT – P. RAYNAUD – D. RICHARD-LENOBLE – A. ROBIER –
J.C. ROLLAND – D. ROYERE – A. SAINDELLE – E. SALIBA – J.J. SANTINI – D. SAUVAGE – D. SIRINELLI – J. WEILL

ANDRES Christian.....	Biochimie et biologie moléculaire
ANGOULVANT Denis	Cardiologie
AUPART Michel.....	Chirurgie thoracique et cardiovasculaire
BABUTY Dominique	Cardiologie
BAKHOS David.....	Oto-rhino-laryngologie
BALLON Nicolas.....	Psychiatrie ; addictologie
BARILLOT Isabelle.....	Cancérologie ; radiothérapie
BARON Christophe	Immunologie
BEJAN-ANGOULVANT Théodora	Pharmacologie clinique
BERHOUE Julien	Chirurgie orthopédique et traumatologique
BERNARD Anne	Cardiologie
BERNARD Louis	Maladies infectieuses et maladies tropicales
BLANCHARD-LAUMONNIER Emmanuelle	Biologie cellulaire
BLASCO Hélène.....	Biochimie et biologie moléculaire
BONNET-BRILHAULT Frédérique	Physiologie
BOURGUIGNON Thierry	Chirurgie thoracique et cardiovasculaire
BRILHAULT Jean.....	Chirurgie orthopédique et traumatologique
BRUNEREAU Laurent	Radiologie et imagerie médicale
BRUYERE Franck.....	Urologie
BUCHLER Matthias.....	Néphrologie
CALAIS Gilles.....	Cancérologie, radiothérapie
CAMUS Vincent.....	Psychiatrie d'adultes
CORCIA Philippe.....	Neurologie
COTTIER Jean-Philippe	Radiologie et imagerie médicale
DE TOFFOL Bertrand	Neurologie
DEQUIN Pierre-François.....	Thérapeutique
DESOUBEAUX Guillaume.....	Parasitologie et mycologie
DESTRIEUX Christophe	Anatomie
DIOT Patrice.....	Pneumologie
DU BOUEXIC de PINIEUX Gonzague	Anatomie & cytologie pathologiques
DUCLUZEAU Pierre-Henri.....	Endocrinologie, diabétologie, et nutrition
EL HAGE Wissam.....	Psychiatrie adultes
EHRMANN Stephan	Médecine intensive – réanimation
FAUCHIER Laurent	Cardiologie
FAVARD Luc.....	Chirurgie orthopédique et traumatologique
FOUGERE Bertrand	Gériatrie
FOUQUET Bernard.....	Médecine physique et de réadaptation
FRANCOIS Patrick.....	Neurochirurgie
FROMONT-HANKARD Gaëlle	Anatomie & cytologie pathologiques
GAUDY-GRAFFIN Catherine.....	Bactériologie-virologie, hygiène hospitalière
GOUPILLE Philippe	Rhumatologie
GRUEL Yves.....	Hématologie, transfusion
GUERIF Fabrice.....	Biologie et médecine du développement et de la reproduction
GUILLON Antoine.....	Médecine intensive – réanimation
GUYETANT Serge	Anatomie et cytologie pathologiques
GYAN Emmanuel.....	Hématologie, transfusion
HAILLOT Olivier.....	Urologie
HALIMI Jean-Michel.....	Thérapeutique
HANKARD Régis.....	Pédiatrie
HERAULT Olivier	Hématologie, transfusion
HERBRETEAU Denis	Radiologie et imagerie médicale
HOURIOUX Christophe.....	Biologie cellulaire
LABARTHE François	Pédiatrie
LAFFON Marc	Anesthésiologie et réanimation chirurgicale, médecine d'urgence
LARDY Hubert.....	Chirurgie infantile
LARIBI Saïd.....	Médecine d'urgence
LARTIGUE Marie-Frédérique	Bactériologie-virologie
LAURE Boris.....	Chirurgie maxillo-faciale et stomatologie
LECOMTE Thierry.....	Gastroentérologie, hépatologie
LESCANNE Emmanuel.....	Oto-rhino-laryngologie
LINASSIER Claude	Cancérologie, radiothérapie
MACHET Laurent	Dermato-vénéréologie
MAILLOT François	Médecine interne
MARCHAND-ADAM Sylvain	Pneumologie

MARRET Henri	Gynécologie-obstétrique
MARUANI Annabel	Dermatologie-vénéréologie
MEREGHETTI Laurent.....	Bactériologie-virologie ; hygiène hospitalière
MITANCHEZ Delphine	Pédiatrie
MORINIERE Sylvain.....	Oto-rhino-laryngologie
MOUSSATA Driffa	Gastro-entérologie
MULLEMAN Denis.....	Rhumatologie
ODENT Thierry.....	Chirurgie infantile
OUAISSI Mehdi	Chirurgie digestive
OULDAMER Lobna.....	Gynécologie-obstétrique
PAINTAUD Gilles	Pharmacologie fondamentale, pharmacologie clinique
PATAT Frédéric	Biophysique et médecine nucléaire
PERROTIN Franck	Gynécologie-obstétrique
PISELLA Pierre-Jean.....	Ophtalmologie
PLANTIER Laurent.....	Physiologie
REMERAND Francis	Anesthésiologie et réanimation, médecine d'urgence
ROINGEARD Philippe.....	Biologie cellulaire
ROSSET Philippe.....	Chirurgie orthopédique et traumatologique
RUSCH Emmanuel.....	Epidémiologie, économie de la santé et prévention
SAINT-MARTIN Pauline.....	Médecine légale et droit de la santé
SALAME Ephrem.....	Chirurgie digestive
SAMIMI Mahtab	Dermatologie-vénéréologie
SANTIAGO-RIBEIRO Maria	Biophysique et médecine nucléaire
THOMAS-CASTELNAU Pierre	Pédiatrie
TOUTAIN Annick.....	Génétique
VAILLANT Loïc.....	Dermato-vénéréologie
VELUT Stéphane.....	Anatomie
VOURC'H Patrick.....	Biochimie et biologie moléculaire
WATIER Hervé	Immunologie
ZEMMOURA Ilyess	Neurochirurgie

PROFESSEUR DES UNIVERSITES DE MEDECINE GENERALE

DIBAO-DINA Clarisse
LEBEAU Jean-Pierre

PROFESSEURS ASSOCIES

MALLET Donatien.....Soins palliatifs
POTIER Alain.....Médecine Générale
ROBERT Jean.....Médecine Générale

PROFESSEUR CERTIFIE DU 2ND DEGRE

MC CARTHY Catherine.....Anglais

MAITRES DE CONFERENCES DES UNIVERSITES - PRATICIENS HOSPITALIERS

AUDEMARD-VERGER Alexandra.....Médecine interne
BARBIER Louise.....Chirurgie digestive
BINET Aurélien Chirurgie infantile || BRUNAUT Paul | Psychiatrie d'adultes, addictologie |
CAILLE Agnès	Biostat., informatique médical et technologies de communication
CLEMENTY Nicolas	Cardiologie
DENIS Frédéric.....	Odontologie
DOMELIER Anne-Sophie	Bactériologie-virologie, hygiène hospitalière
DUFOUR Diane	Biophysique et médecine nucléaire
ELKRIEF Laure.....	Hépatologie – gastroentérologie
FAVRAIS Géraldine	Pédiatrie
FOUQUET-BERGEMER Anne-Marie.....	Anatomie et cytologie pathologiques
GATAULT Philippe.....	Néphrologie
GOUILLEUX Valérie.....	Immunologie
GUILLON-GRAMMATICO Leslie.....	Epidémiologie, économie de la santé et prévention

HOARAU Cyrille	Immunologie
IVANES Fabrice	Physiologie
LE GUELLEC Chantal.....	Pharmacologie fondamentale, pharmacologie clinique
LEFORT Bruno	Pédiatrie
LEGRAS Antoine.....	Chirurgie thoracique
LEMAIGNEN Adrien	Maladies infectieuses
MACHET Marie-Christine	Anatomie et cytologie pathologiques
MOREL Baptiste	Radiologie pédiatrique
PIVER Éric.....	Biochimie et biologie moléculaire
REROLLE Camille.....	Médecine légale
ROUMY Jérôme	Biophysique et médecine nucléaire
SAUTENET Bénédicte	Thérapeutique
TERNANT David.....	Pharmacologie fondamentale, pharmacologie clinique
VUILLAUME-WINTER Marie-Laure.....	Génétique

MAITRES DE CONFERENCES DES UNIVERSITES

AGUILLON-HERNANDEZ Nadia.....	Neurosciences
NICOGLLOU Antonine	Philosophie – histoire des sciences et des techniques
PATIENT Romuald.....	Biologie cellulaire
RENOUX-JACQUET Cécile	Médecine Générale

MAITRES DE CONFERENCES ASSOCIES

BARBEAU Ludivine.....	Médecine Générale
RUIZ Christophe.....	Médecine Générale
SAMKO Boris.....	Médecine Générale

CHERCHEURS INSERM - CNRS - INRA

BOUAKAZ Ayache	Directeur de Recherche INSERM – UMR INSERM 1253
CHALON Sylvie	Directeur de Recherche INSERM – UMR INSERM 1253
COURTY Yves	Chargé de Recherche CNRS – UMR INSERM 1100
DE ROCQUIGNY Hugues	Chargé de Recherche INSERM – UMR INSERM 1259
ESCOFFRE Jean-Michel.....	Chargé de Recherche INSERM – UMR INSERM 1253
GILOT Philippe.....	Chargé de Recherche INRA – UMR INRA 1282
GOUILLEUX Fabrice	Directeur de Recherche CNRS – UMR CNRS 7001
GOMOT Marie.....	Chargée de Recherche INSERM – UMR INSERM 1253
HEUZE-VOURCH Nathalie.....	Chargée de Recherche INSERM – UMR INSERM 1100
KORKMAZ Brice.....	Chargé de Recherche INSERM – UMR INSERM 1100
LAUMONNIER Frédéric	Chargé de Recherche INSERM – UMR INSERM 1253
MAZURIER Frédéric.....	Directeur de Recherche INSERM – UMR CNRS 7001
MEUNIER Jean-Christophe	Chargé de Recherche INSERM – UMR INSERM 1259
PAGET Christophe	Chargé de Recherche INSERM – UMR INSERM 1100
RAOUL William	Chargé de Recherche INSERM – UMR CNRS 7001
SI TAHAR Mustapha	Directeur de Recherche INSERM – UMR INSERM 1100
WARDAK Claire.....	Chargée de Recherche INSERM – UMR INSERM 1253

CHARGES D'ENSEIGNEMENT

Pour l'Ecole d'Orthophonie

DELORE Claire	Orthophoniste
GOUIN Jean-Marie.....	Praticien Hospitalier

Pour l'Ecole d'Orthoptie

MAJZOUB Samuel.....	Praticien Hospitalier
---------------------	-----------------------

Pour l'Ethique Médicale

BIRMELE Béatrice.....	Praticien Hospitalier
-----------------------	-----------------------

SERMENT D'HIPPOCRATE

En présence des Maîtres de cette Faculté,
de mes chers condisciples
et selon la tradition d'Hippocrate,
je promets et je jure d'être fidèle aux lois de l'honneur
et de la probité dans l'exercice de la Médecine.

Je donnerai mes soins gratuits à l'indigent,
et n'exigerai jamais un salaire au-dessus de mon travail.

Admis dans l'intérieur des maisons, mes yeux
ne verront pas ce qui s'y passe, ma langue taira
les secrets qui me seront confiés et mon état ne servira pas
à corrompre les mœurs ni à favoriser le crime.

Respectueux et reconnaissant envers mes Maîtres,
je rendrai à leurs enfants
l'instruction que j'ai reçue de leurs pères.

Que les hommes m'accordent leur estime
si je suis fidèle à mes promesses.
Que je sois couvert d'opprobre
et méprisé de mes confrères
si j'y manque.

RESUME

L'insuffisance cardiaque aiguë est un motif courant d'admission aux urgences; les patients ne sont pas systématiquement hospitalisés en cardiologie. L'objectif principal de notre étude est de comparer la prise en charge des patients diagnostiqués d'une insuffisance cardiaque aiguë aux urgences, hospitalisés en cardiologie à ceux hospitalisés dans d'autres services d'aval. Nous avons réalisé une étude observationnelle rétrospective mono-centrique au CHU de Tours en incluant tous les patients de plus de 65 ans hospitalisés pour une insuffisance cardiaque aiguë entre janvier 2015 et décembre 2017; soit 1079 patients; 26% ont été hospitalisés en cardiologie. Nous n'avons pas retrouvé de différence significative entre les deux groupes en termes de constantes vitales à l'admission, d'analyses biologiques, de comorbidités, hormis la présence en cardiologie de troubles cognitifs moins fréquents (1,5% vs 7%) et d'un âge plus jeune (82 ans vs 87). Concernant les patients hospitalisés en cardiologie, les syndromes coronariens sont significativement plus fréquents (11% vs 2%), alors qu'un facteur déclenchant infectieux est significativement moins fréquent (24% vs 61%); sans autre différence parmi les facteurs déclenchants étudiés. En cardiologie l'utilisation de VNI est plus fréquente (10% vs 3%) ainsi que la réalisation d'ETT (84% vs 20%) ; la quasi totalité des coronarographies y sont réalisées (17% vs < 1%), la durée d'hospitalisation y est plus courte (6 jours vs 9). Enfin la prescription à la sortie de bêtabloquants (87% vs 65%) et d'IEC (45% vs 28%) y est plus fréquente. La mortalité est inférieure en cardiologie (4% vs 11%).

Les patients hospitalisés en cardiologie sont plus jeunes et moins fragiles, ils bénéficient d'une prise en charge correspondant davantage aux recommandations et d'un taux de mortalité plus faible.

ABSTRACT

Acute Heart Failure (AHF) is a common reason for emergency admissions; patients are not systematically hospitalized in cardiology. The main objective of our study is to compare the management of patients diagnosed with AHF in Emergency Department (ED) hospitalized in cardiology with those hospitalized in other department. We realized a single-center retrospective observational study at the CHU Tours including all patients over 65 years old hospitalized for AHF between January 2015 and December 2017; 1079 patients; 26% were hospitalized in cardiology. We did not find any significant difference between the two groups in terms of vital constants on admission, biological parameters, comorbidities, except in cardiology of less frequent cognitive disorders (1.5% vs 7%) and a younger age (82 vs 87). Regarding patients hospitalized in cardiology, coronary syndromes are significantly more frequent (11% vs 2%), while an infectious trigger is significantly less frequent (24% vs 61%); without any other difference among decompensation factors studied. In cardiology, the use of NIV is more frequent (10% vs 3%) as well as the realization of echocardiography (84% vs 20%); almost coronarography are performed there (17% vs <1%), the length of stay is shorter (6 days vs 9). Mortality is lower in cardiology (4% vs 11%).

Patients hospitalized in cardiology are younger and less frailer, they benefit from care more in line with recommendations and a lower mortality rate.

Elderly patients with Acute heart failure: hospital journey after initial care in the emergency department

Introduction:

Heart failure (HF) is a common pathology and its prevalence is increasing particularly in an elderly population. HF prevalence is 2% in the general population increasing to 9% in 80-89 years old patients. (1) Every year, 150 000 hospitalizations for HF are counted in France. (1) Acute heart failure (AHF) is a serious disease with a high in-hospital mortality (2.7 to 30%). (2–4) Emergency departments (ED) are the main first medical contact before hospitalization, ahead of general practitioners and cardiologists. (3) For this reason, ED have an important role for referring hospitalized patients to the appropriate unit.

With the aging population, patients with AHF also have multiples comorbidities and need a global approach. (5) As a consequence, we see today different patient journeys with an important proportion of patients hospitalized outside cardiology units, in geriatrics, pneumology or internal medicine. (3,4)

Unlike chronic heart failure, AHF management has not seen any major improvement over the last years. To improve AHF patients care, ED physicians can just optimize current practice: diuretics, vasodilators... and follow international guidelines. (5,6)

We found few data in the literature comparing hospitalized HF patients in cardiology and those hospitalized in other specialties. Previous publications suggest that HF patients attended by cardiologists during hospitalization had a better outcome compared to patients that didn't saw a cardiologist. (3,7–10)

The main objective of this study was to compare hospitalized HF patients management depending on the first unit of hospitalization after initial care in the ED: cardiology versus other specialties (Gériatries, Internal Medicine, Pneumology...).

Secondary objectives were to carry out an epidemiological description of hospitalized HF patients and compare the patients diagnosis in the ED to the diagnosis at the end of the hospitalization.

Material and Method

This is a retrospective monocentric observational study, between January 1st 2015 and December 31st 2017, using the clinical data from the EHop® data warehouse at the CHRU in Tours. EHop® is a clinical data warehouse that brings together the data from the patient file, the medicalized information system program (PMSI) and laboratory results.

All consecutive patients aged 65 and older hospitalized for HF after ED management over the study period were included in this study. The diagnosis of HF has been retained according to the ED discharge diagnosis, by extracting the conclusion from the ED report via the CDC (Clinical Data Center) database. Patients discharged after ED management were excluded from this analysis. In case of multiple hospitalizations of the same patient during the study period, only the first stay with a HF diagnosis in the ED was included in the analysis, subsequent hospitalizations have been excluded.

The key criterion of assessment was hospital mortality following hospital stay. It was determined by the mode of exit from the PMSI summary included in the CDC.

We collected the first medical unit where patients were admitted after ED management. Secondly, a description of the population and patients management was made according to the following variables: age, comorbidities, autonomy at home, vital signs and laboratory parameters at admission, factors of decompensation, complementary examinations, care in the ED, care during hospital stay, hospital outcome, hospital length of stay and hospital discharge prescriptions. Data has been collected via the data warehouse within the limits of their availability. It was necessary to resort to the patient record when a data was not available in the data warehouse. Finally each hospital stay was associated with one of the three following groups - Cardiology, intensive care unit (ICU) and Other - depending on the first medical unit of admission after ED.

Our study have been approved by the Ethics Committee in Human Research on 23 July 2019 (Groupe éthique d'aide à la recherche clinique pour les protocoles de recherche non soumis au comité de protection des personnes n° 2019 062). This study is approved by CNIL (n°2019_027).

Statistics

Descriptive analysis

Patients were characterized according to their hospital pathway, distinguishing 3 modalities depending on whether the patients was admitted to cardiology department, ICU or any other specialty. The three routes were then described. Finally, the HF diagnosis in the ED was compared to the hospital discharge diagnosis.

Comparative analysis

We calculated p-values in a comparison two by two. We used T-test for quantitative variables, and Khi2 for qualitative variables; without correction with other co-variables. If a data was missing, we did not take the value in account. We calculated odd-ratios with their confidence intervals, and multivariate logistic regression p-values using a missing data management method (we used a multiple imputation to five iteration, in case of absence of normal distribution we used a decision tree method: CART).

Results

From January 1st 2015 to December, 31st 2017, 1079 patients were included. Among them, 280 (26%) were hospitalized in cardiology, 768 (71%) in other specialties and 31 (3%) in ICU. Due to their small number and their specificity, patients admitted to intensive care after leaving the emergency department were not analyzed.

The main patients characteristics before hospitalisation are presented in table 1. Forty five percent of these patients were male without significant difference between the two groups. The median age is 81 years old (yo) in the cardiology group and 88 yo in group other specialties ($p < 0,001$). We observed that 61 (22%) of the patients are dependent at home in the cardiology group versus 385 (50%) in the other group ($p < 0,001$). Among the different co-morbidities studied, only one significant difference was found between the two groups for cognitive disorders, 19 (7%) in cardiology against 211 (27%) in the other group ($p < 0,001$).

Patients characteristics during ED management are also described in table 1. We did not find any significant difference between the vital signs on ED arrival between the two groups. The only significant difference found concerns albumin, in the cardiology group the median was 38.66 g/L and in the other group: 35.37 g/L ($p < 0,001$).

Factors of decompensation are presented in table 2. The proportion of acute coronary syndrome hospitalized in cardiology 32 (11%) is significantly higher than in the other group 16 (2 %) ($p < 0,001$). Conversely, the percentage of infectious etiology is significantly lower in the cardiology group: 68 (24%) versus 469 (61%) in the other group ($p < 0,001$). There is no significant difference among the other decompensation factors.

The hospital management in terms of treatment and complementary tests are presented in table 3. The proportion of diuretic prescriptions in the ED is significantly higher in the other discharge destination group: 187 (76%) versus 586 (67%) ($p < 0,001$). Conversely; the rate of nitrates prescription in the ED is significantly higher in the cardiology group 51(18%) versus 75 (10%) in the other group ($p = 0,001$). About hospital treatments outside the ED, the use of non-invasive ventilation is significantly higher for patients hospitalized in cardiology 42 (10%) compared to the other group 55 (3%) ($p < 0,001$). Regarding complementary examinations, the proportion of echocardiography is significantly higher for patients hospitalized in cardiology 236 (84%) versus 152 (20%) in the other groupe;($p < 0,001$). Almost all patients who have been treated with coronary angiography are hospitalized in cardiology 47 (17%) versus 2 ($< 1\%$) ($p < 0,001$). There were no significant differences for the other complementary tests.

Hospital outcomes and discharge prescriptions are also presented in table 3. At hospital discharge, the proportion of beta-blocker prescriptions is significantly higher in patients hospitalized in cardiology 197 (70%) versus 432 (56%) ($p < 0,001$) ; as well as for the prescription of ACE inhibitors 125 (45%) versus 216 (28%) ($p < 0,001$). There are not other significant differences among the other prescriptions. The length of stay median's is significantly lower in the cardiology group (4,5 days) versus other group (6 days) ($p < 0,001$). Furthermore, 244 (87%) of people were discharged at home in the cardiology group compared to 503 (65%) in the other group. The mortality rate is significantly lower for patients hospitalized in cardiology 12 (4%) versus 83 (11%) in the other group; ($p < 0,001$).

Finally, the HF ED diagnosis was confirmed in 93% of patients admitted to cardiology (N= 259) and in 72% of cases in the other specialities (N=551).

Discussion

Our study compared hospitalized AHF patients management, after initial care in the ED, depending on the first unit of hospitalization: in cardiology or other specialties. Patients in the other specialties group seemed to be frailer and older but had a similar severity of AHF at admission. However, there were different management of AHF in the two groups.

Patients hospitalized in cardiology were younger and more autonomous at home compared to patient hospitalized in other services, but they had the same co-morbidities, except less cognitive impairment (20% lower in the group of patients hospitalized in cardiology). Elderly patient, dependent, with cognitive disorder, need a more comprehensive care approach (11, 12). This special care can explain other discharge destination choice. Almost all ACS were hospitalized in cardiology, it is easy to explain that by the need for specialized management and coronary angiography treatment. For infectious decompensation factor, patients were significantly more hospitalized in other services, requiring cardiological management but also infectious treatment. There was no difference for rhythm disorder decompensation factor between the two group. Other studies found same significant differences between groups cardiology and other specialties with patient more older,

less autonomous and more frequently presenting cognitive disorders; and precipitating factors: infectious more frequently in patients not hospitalized in cardiology . (13)

There was no difference in vital signs or biological criteria at admission in ED between the two groups; however, some studies have shown a difference in survival depending on the mode of presentation at the admission of heart failure. That suggest initial severity of AHF was similar in cardiology and other specialties group. The only difference concerned albumin, with a median 3 g/L lower in the other specialties group. This difference can be related to a significantly higher median age in this group with a higher risk of undernutrition. Patients in the cardiology group received more often nitrates and use of NIV. These treatments needed continuous monitoring, difficult to use in conventional department. All except two patients requiring coronarography were hospitalized in cardiology. ECG and chest X-ray were also realized in both groups, usually performed in the ED before hospitalization. Echocardiography was sixty percent higher in the cardiology department, with a major impact on AHF diagnostic time, the etiological diagnosis, and more appropriate management. (14)

Internationale guidelines for prescription on leaving hospital were significantly more followed for patients hospitalized in cardiology department, the beta-blocker prescription is 14% higher in the cardiology group and it is the same for IEC (17% more for the cardiology group). These differences between the two groups have been found in other studies. (15, 16) IEC and SARTANS prescriptions is lower in older patients, the group of patients hospitalized in cardiology had a median age of 7 years lower, this may partly interfere with this result. (17)

More patients were return at home in the cardiology group and their length of stay were shorter, which can be explained by frailer patients in the non-cardiac group. Median length of stay is almost three days less for patients in cardiology, these results are consistent with those of the literature. (18, 19)

Mortality is lower in the cardiologic's group. It is possible to add the value of specialized cardiologic management because there are significant differences in therapeutic management and complementary examination between the two groups with a better follow-up of recommendations in cardiology, access to higher echography that can lead to more appropriate etiological treatment. (20)

Diagnostic of AHF in the ED was confirmed in 75 percent of cases on the conclusion of the discharge service; 93% of patients in cardiology group and 72% of patients in the other group. These results are probably underestimated by our method of data collection, the diagnosis and the output coding of the downstream services having mainly focused on the triggering factor without considering the part of the associated cardiac decompensation.

All of these elements suggest the interest of a systematic cardiological evaluation of AHF and echocardiography associated with a multidisciplinary care-management, regardless of the department in which they are hospitalized, and with a decompensation factor not covered by cardiology treatment. It is therefore necessary for patients with multiple comorbidities to propose multidisciplinary management including cardiologic evaluation. The creation of cardiogeriatric services could partly address this need. A survival study could be conducted to determine the rate of return at home hospitalization of each of the two groups, as well as the length of time between hospitalizations. This may in part reflect a difference in plan of care, despite the known population differences between these two groups.

Conclusion

Hospitalized patients with AHF, in other department than cardiology, were older and frailer but had a similar severity of AHF at admission. They didn't have the same diagnosis and therapeutic management and had a highest mortality compared to AHF hospitalized in cardiology. Systematic cardiological and multidisciplinary evaluation could be considered and evaluated to manage these complex patients.

Table 1: Patients characteristics before ED arrival

	TOTAL N (%)	Missing data / unrealized	Cardiology N (%)	Other specialties N (%)	P- value 2 by 2	Odds ratio IC 95 %	P- value
N (%)	1079 (100)		280 (26)	768 (71)			
Age, (years, median, IQR)	87 (81-91)	0 (0)	81.81 (8.13)	87.20 (7.16)	<0.001	0.92 (0.91,0.94)	<0.001
Male, N (%)	483 (45)		142 (51)	320 (42)	0.011	1 (0.73,1.37)	0.975
Autonomy at home		28 (2,6)			<0.001		
Autonomous	579 (54)		195 (70)	356 (46)		-	-
Dependent	449 (42)		61 (22)	385 (50)		0.48 (0.34,0.69)	<0.001
Bedridden	23 (2)		1 (0)	22 (3)		0.24 (0.03,1.9)	0.142
Co-morbidities, N (%)							
Any cardiopathies	894 (83)	4 (0,4)	236 (84)	633 (82)	0.442	1.34 (0.88,2.05)	0.164
Diabetes	306 (28)	2 (0,2)	93 (33)	199 (26)	0.020	0.95 (0.68,1.34)	0.842
Chronic obstructive pulmonary disease	159 (15)	3 (0,3)	38 (14)	112 (15)	0.779	0.68 (0.43,1.06)	0.077
Asthma	36 (3)	3 (0,3)	7 (3)	28 (4)	0.489	0.57 (0.23,1.38)	0.214
Chronic renal failure	245 (23)	3 (0,3)	65 (23)	167 (22)	0.632	1 (0.7,1.43)	0.975
Cognitive impairment	233 (22)	16 (1,5)	19 (7)	211 (27)	<0.001	0.33 (0.2,0.56)	<0.001
Néoplasias	440 (41)	8 (0,7)	108 (39)	320 (42)	0.433	0.88 (0.65,1.21)	0.490
Vital signs at admission							
Systolic blood pressure Average (mmHg)	138 (120-158)	19 (1,8)	145.18 (30.17)	138.96 (28.21)	0.002	1 (0.99,1.01)	0.644
Diastolic blood pressure Average (mmHg)	73 (62-85)	18 (1,7)	78.72 (18.50)	73.41 (17.21)	<0.001	1.01 (1,1.02)	0.033
Cardiac frequency Average (bpm)	82 (70-100)	19 (1,8)	88.98 (44.40)	85.02 (21.54)	0.057	1 (1,1.01)	0.237
oxygen saturation Average (%)	95 (92-97)	46 (4,3)	93.50 (5.27)	93.60 (6.40)	0.823	1 (0.97,1.02)	0.860
Respiratory rate Average (per min)	24 (20-31)	265 (24,5)	25.93 (7.32)	26.08 (7.53)	0.804	1 (0.98,1.02)	0.673
Glasgow score Average	15 (15-15)	407 (37,7)	14.88 (0.70)	15.09 (6.53)	0.665	1 (0.95,1.06)	0.861
Laboratory parameters at admission							
NT-proBNP (ng/L)	5123 (2344-10145)	500 (46,3)	8441.77 (9598.98)	8540.97 (11163.39)	0.928	1 (1,1)	0.960
creatinine (μmol/L)	102 (75-140)	1 (0)	120.28 (58.17)	121.67 (83.79)	0.798	1 (1,1)	0.311
troponine (ng/L)	43 (27-78)	576 (53,4)	104.43 (252.10)	106.98(504.01)	0.958	1 (1,1)	0.977
ASAT (UI/L)	27 (20-39)	170 (15,7)	57.39 (165.47)	43.28 (95.49)	0.122	1 (1,1)	0.654
ALAT (UI/L)	19 (13-31)	151 (14,0)	43.42 (139.66)	32.54 (68.73)	0.124	1 (1,1)	0.871
GGT (UI/L)	54 (30-111)	160 (14,8)	111.16 (134.01)	91.78 (123.55)	0.050	1 (1,1)	0.541
Alkaline phosphatase (UI/L)	97 (73-135)	160 (14,8)	116.45 (63.66)	114.55 (77.18)	0.743	1 (1,1)	0.612
Albuminemia (g/L)	36 (33-39)	241 (22,3)	38.66 (4.22)	35.37 (4.65)	<0.001	1.12 (1.07,1.18)	<0.001
Total bilirubinemia (μmol/L)	12 (8-18)	177 (16,4)	16.84 (13.21)	14.35 (9.99)	0.004	1.03 (1,1.06)	0.086

Table 2: factors of decompensation

	TOTAL N (%)	Missing data	Cardiologie N (%)	Other discharge destination N (%)	P-value 2 by 2	Odds ratio IC 95 %	Regression p value
N (%)	1079 (100)		280 (26)	768 (71)			
Acute coronary syndrome	48 (4)	1 (0)	32 (11)	16 (2)	<0.001	4.86 (2.48,9.52)	<0.001
Rhythm disorders	308 (29)	1 (0)	90 (32)	214 (28)	0.191	1.18 (0.83,1.69)	0.351
Infection	555 (51)	2 (0,2)	68 (24)	469 (61)	<0.001	0.31 (0.22,0.45)	<0.001
Hypertension	153 (14)	1 (0)	60 (21)	89 (12)	<0.001	1.9 (1.26,2.87)	0.002
non compliance with treatment	65 (6)	678 (63)	32 (11)	31 (4)	<0.001	2.32 (1.38,3.88)	0.003
Others causes	184 (17)		61 (22)	115 (15)	0.012	1.47 (0.97,2.23)	0.071

Table 3: Care-management in hospital

	TOTAL N (%)	Missing data	Cardiologie N (%)	Other discharge destination N (%)	P-value 2 by 2	Odds ratio IC 95 %	P-value
Treatment in the Emergency department							
Diuretics	791 (73)	3 (0,3)	187 (67)	586 (76)	0.003	0.44 (0.31,0.61)	<0.001
Nitrates	129 (12)	3 (0,3)	51 (18)	75 (10)	<0.001	2.12 (1.36,3.32)	0.001
Non-invasive ventilation	112 (10)	3 (0,3)	42 (15)	55 (7)	<0.001	1.49 (0.9,2.46)	0.119
Treatment in the discharge destination							
Diuretics	865 (80)	25 (2,3)	229 (82)	620 (81)	0.001	2.48 (1.58,3.91)	<0.001
Nitrates	160 (15)	25 (2,3)	40 (14)	116 (15)	0.902	0.68 (0.44,1.07)	0.095
Non-invasive ventilation	61 (6)	25 (2,3)	28 (10)	20 (3)	<0.001	3.37 (1.76,6.48)	<0.001
Dobutamine	9 (1)	25 (2,3)	9 (3)	0 (0)	<0.001		
Complementary examinations							
Echography	400 (37)	0 (0)	236 (84)	152 (20)	<0.001		
Coronary angiography	52 (5)	0 (0)	47 (17)	2 (0)	<0.001		
ECG	1068 (99)	0 (0)	280 (100)	757 (99)	0.095		
Chest X-Ray	1060 (98)	0 (0)	279 (100)	751 (98)	0.075		
Length of stay (days) Average	6 (4-10)		6.13(5.55)	9.09 (8.44)	<0.001		
Prescription on leaving hospital							
Beta-blocker	649 (60)	31 (2,9)	197 (70)	432 (56)	<0.001		<0.001
ACE inhibitor	352 (33)	31 (2,9)	125 (45)	216 (28)	<0.001		<0.001
Angiotensin II receptor antagonists	145 (13)	32 (3,0)	37 (13)	102 (13)	0.891		0.270
Diuretics	730 (68)	34 (3,1)	191 (68)	520 (68)	0.172		0.907
Hospital outcome							
Home	772 (72)		244 (87)	503 (65)		-	-
Service of following-care and rehabilitation	40 (4)		4 (1)	35 (5)		0.24 (0.08,0.7)	0.009
Retirement home	161 (15)		20 (7)	141 (18)		0.31 (0.19,0.52)	<0.001
Palliative care-unit	5 (0)		0 (0)	4 (1)		0 (0,Inf)	0.976
Death	99 (9)		12 (4)	83 (11)		0.28 (0.14,0.55)	<0.001
True diagnosis	810 (75)		259 (93)	551 (72)			

Bibliographie

1. Malaquin D, Tribouilloy C. Epidemiology of heart failure. *Rev Prat.* 20 sept 2010;60(7):911-5.
2. Ambrosy AP, Fonarow GC, Butler J, Chioncel O, et al. The global health and economic burden of hospitalizations for heart failure: lessons learned from hospitalized heart failure registries. *J Am Coll Cardiol.* 1 avr 2014;63(12):1123-33.
3. Laveau F, Hammoudi N, Berthelot E, Belmin J, et al. Patient journey in decompensated heart failure: An analysis in departments of cardiology and geriatrics in the Greater Paris University Hospitals. *Arch Cardiovasc Dis.* janv 2017;110(1):42-50.
4. Chouihed T, Manzo-Silberman S, Peschanski N, Charpentier S, et al. Management of suspected acute heart failure dyspnea in the emergency department: results from the French prospective multicenter DeFSSICA survey. *Scand J Trauma Resusc Emerg Med.* 17 sept 2016;24(1):112.
5. Mebazaa A, Yilmaz MB, Levy P, Ponikowski P, et al. Recommendations on pre-hospital & early hospital management of acute heart failure: a consensus paper from the Heart Failure Association of the European Society of Cardiology, the European Society of Emergency Medicine and the Society of Academic Emergency Medicine. *Eur J Heart Fail.* juin 2015;17(6):544-58.
6. Laribi S, Aouba A, Nikolaou M, Lassus J, et al. Trends in death attributed to heart failure over the past two decades in Europe. *Eur J Heart Fail.* mars 2012;14(3):234-9.
7. Boom NK, Lee DS, Tu JV. Comparison of processes of care and clinical outcomes for patients newly hospitalized for heart failure attended by different physician specialists. *Am Heart J.* févr 2012;163(2):252-9.
8. Foody JM, Rathore SS, Wang Y, Herrin J, et al. Physician specialty and mortality among elderly patients hospitalized with heart failure. *Am J Med.* oct 2005;118(10):1120-5.
9. Patel JA, Fotis MA. Comparison of treatment of patients with congestive heart failure by cardiologists versus noncardiologists. *Am J Health-Syst Pharm AJHP Off J Am Soc Health-Syst Pharm.* 15 janv 2005;62(2):168-72.
10. Jong P, Gong Y, Liu PP, Austin PC, et al. Care and outcomes of patients newly hospitalized for heart failure in the community treated by cardiologists compared with other specialists. *Circulation.* 15 juill 2003;108(2):184-91.
11. Adams KF, Fonarow GC, Emerman CL, LeJemtel TH, et al. Characteristics and outcomes of patients hospitalized for heart failure in the United States: Rationale, design, and preliminary observations from the first 100,000 cases in the Acute Decompensated Heart Failure National Registry (ADHERE). *Am Heart J.* févr 2005;149(2):209- 16.

12. Delahaye F, de Gevigney G, Gaillard S, Cheneau E. Epidemiology and economic impact of heart failure in France. *Arch Mal Coeur Vaiss.* nov 1998;91(11):1307- 14.
13. Laveau F, Hammoudi N, Berthelot E, Belmin J, et al. Patient journey in decompensated heart failure: An analysis in departments of cardiology and geriatrics in the Greater Paris University Hosp. *Arch Cardiovasc Dis.* janv 2017;110(1):42- 50.
14. Chouihed T, Manzo-Silberman S, Peschanski N, Charpentier S, et al. Management of suspected acute heart failure dyspnea in the emergency department: results from the French prospective multicenter DeFSSICA survey. *Scand J Trauma Resusc Emerg Med.* 2016.24:112.
15. Cleland JGF, McDonagh T, Rigby AS, Yassin A, et al. The national heart failure audit for England and Wales 2008-2009. *Heart.* juin 2011;97(11):876- 86.
16. Gambassi G, Forman DE, Lapane KL, Mor V, et al. Management of heart failure among very old persons living in long-term care: has the voice of trials spread? The SAGE Study Group. *Am Heart J.* janv 2000;139(1 Pt 1):85- 93.
17. Komajda M, Hanon O, Hochadel M, Follath F, et al. Management of octogenarians hospitalized for heart failure in Euro Heart Failure Survey I. *Eur Heart J.* juin 2007;28(11):1310- 8.
18. Allen LA, Hernandez AF, O'Connor CM, Felker GM. End Points for Clinical Trials in Acute Heart Failure Syndromes. *J Am Coll Cardiol.* 16 juin 2009;53(24):2248- 58.
19. Savarese G, Lund LH. Global Public Health Burden of Heart Failure. *Card Fail Rev.* avr 2017;3(1):7- 11.
20. Nieminen MS, Brutsaert D, Dickstein K, Drexler H, et al. EuroHeart Failure Survey II (EHFS II): a survey on hospitalized acute heart failure patients: description of population. *Eur Heart J.* avr 2006;27(22):2725- 36.

Vu, le Directeur de Thèse

J. DENARD Pierre

A stylized handwritten signature in blue ink, consisting of several overlapping loops and a long horizontal stroke at the bottom.

Vu, le Doyen
De la Faculté de Médecine de Tours
Tours, le

Turpin Benjamin

19 pages – 3 tableaux

Résumé :

L'insuffisance cardiaque aiguë est un motif courant d'admission aux urgences; les patients ne sont pas systématiquement hospitalisés en cardiologie. L'objectif principal de notre étude est de comparer la prise en charge des patients diagnostiqués d'une insuffisance cardiaque aiguë aux urgences, hospitalisés en cardiologie à ceux hospitalisés dans d'autres services d'aval. Nous avons réalisé une étude observationnelle rétrospective mono-centrique au CHU de Tours en incluant tous les patients de plus de 65 ans hospitalisés pour une insuffisance cardiaque aiguë entre janvier 2015 et décembre 2017; soit 1079 patients; 26% ont été hospitalisés en cardiologie. Nous n'avons pas retrouvé de différence significative entre les deux groupes en termes de constantes vitales à l'admission, d'analyses biologiques, de comorbidités, hormis la présence en cardiologie de troubles cognitifs moins fréquents (1,5% vs 7%) et d'un âge plus jeune (82 ans vs 87). Concernant les patients hospitalisés en cardiologie, les syndromes coronariens sont significativement plus fréquents (11% vs 2%), alors qu'un facteur déclenchant infectieux est significativement moins fréquent (24% vs 61%); sans autre différence parmi les facteurs déclenchants étudiés. En cardiologie l'utilisation de VNI est plus fréquente (10% vs 3%) ainsi que la réalisation d'ETT (84% vs 20%) ; la quasi totalité des coronarographies y sont réalisées (17% vs < 1%), la durée d'hospitalisation y est plus courte (6 jours vs 9). Enfin la prescription à la sortie de bêtabloquants (87% vs 65%) et d'IEC (45% vs 28%) y est plus fréquente. La mortalité est inférieure en cardiologie (4% vs 11%).

Les patients hospitalisés en cardiologie sont plus jeunes et moins fragiles, ils bénéficient d'une prise en charge correspondant davantage aux recommandations et d'un taux de mortalité plus faible.

Mots clés : insuffisance cardiaque aiguë; décompensation cardiaque; Oedème aigu du Poumon; cardio-gériatrie.

Mots clés en anglais: Heart-Failure; Acute Heart Failure; Cardiac Decompensation; Geriatric cardiology.

Jury : Président du Jury : Professeur Saïd LARIBI

Directeur de thèse : Docteur Pierre DENEAU

Membres du Jury : Professeur Laurent FAUCHIER
Docteur Fanny POITAU
Docteur Camille DEBACQ

Date de soutenance : 28 Juin 2021