ARTICLE ORIGINAL

Surgery of infective endocarditis: report of 203 patients.

Chirurgie de l'endocardite infectieuse : à propos de 203 cas.

Redha Lakehal, Radouane Boukarroucha, Farid Aimer, Rabeh Bouharagua, Baya Aziza, Soumaya Bendjaballah, Abdelmallek Brahami

Chirurgie Cardiovasculaire, EHS El Riadh, Constantine – Algérie

Correspondance à :
Redha LAKEHAL
lakehal.redha@gmail.com

DOI :https://doi.org/10.48087/BJMSoa.2016.3212

This is an open access article distributed under the terms of the Creative Commons Attribution International License (***CC BY 4.0***), which permits unrestricted use, distribution, and reproduction in any medium or format, provided the original author and journal are appropriately credited.

ABSTRACT

Introduction: infectious endocarditis is a serious disease with a high morbimortality. Diagnosis relies on modified criteria of Dukes. The main surgical indication in emergency are hemodynamic, infectious and embolic complications. The aim of this work is to present epidemiological, clinical and ultrasonographic characteristics, and report our experience in order to assess the results of surgical treatment of the disease and to improve the management. **Methods**: This is a monocenter retrospective study of 203 patients operated for infective endocarditis, collected between January 2001and June 2015. This study interested only the operative period. **Results:** The mean age is 42 years with male predominance (62, 12%). The causal heart disease was predominantly rheumatic in 40 % of cases. 7. %88 had endocarditis on cardiac prosthesis. The causative germ in isolated in only 47% of cases; Staphylococcus and Streptococcus were the most frequent germs. The left ventricular function was altered in 24 % of cases. The patients were operated in emergency in 59 cases and delayed surgery in 144 cases. Valve replacement was done in 84,8 % of cases and valve repair in 15.2 % of cases. Stay in intensive care unit was more than 72 hours in 28 % of cases, intubation procedure < 24 hours in 69%, post-operative stay ≥ 7 days in 70 % and simple post-operative history in 60 % of cases. **Conclusion**: endocardial infection is a serious disease. Regular studies detailing epidemiology of these infections. The actual trend is in favor of earlier surgery, privileging valve repair.

Keywords: Surgery ; infective endocarditis.

RÉSUMÉ

Introduction: l'endocardite infectieuse est une pathologie grave avec une morbimortalité élevée. Le diagnostic est posé sur les critères de Duke modifiés, et les trois principales indications chirurgicales en urgence sont : la défaillance cardiaque, l'infection non contrôlée malgré une antibiothérapie adaptée et les accidents emboliques. Le but de ce travail est de présenter les caractéristiques épidémiologiques, cliniques, écho-graphiques et de rapporter notre expérience afin d'évaluer les résultats du traitement chirurgical de cette maladie et d'en améliorer la prise en charge. **Méthodes** : Il s'agit d'une étude monocentrique, rétrospective concernant 203 malades opérés pour une endocardite infectieuse, colligés au service de chirurgie cardiaque de EHS Erriadh (Constantine) entre janvier 2001 et juin2015. Les données ne concernent que la période opératoire (1er mois). **Résultats** : L'âge moyen est de 42 ans avec une prédominance masculine. La cardiopathie causale était rhumatismale dans 40 % des cas. Le germe en cause a été isolé uniquement dans 47 % des cas ; le streptocoque et le staphylocoque étaient les plus fréquents. La fonction ventriculaire préopératoire a été altérée dans 27,4 % des cas et les atteintes extracardiaques ont été dominées par les complications : cérébrales (14 %) et rénales (12%). Les patients opérés en urgence étaient au nombre de 59 et à froid de 144 patients. Le geste le plus souvent pratiqué était le remplacement valvulaire dans 84,8 % des cas. Sortie de CEC sous drogues dans 60% des cas, Séjour en unité de soins intensifs >72h: 28%, durée d'intubation ≤ 24h dans 69 % des cas. Séjour post opératoire > 7 j dans plus de 70 % des cas (extrême de 72 j). Les suites opératoires étaient simples dans 60 % des cas. **Conclusion** : C'est une maladie qui évolue dans le temps (germes en cause et traitement), d'où l'intérêt d'études épidémiologiques régulières. La tendance actuelle est en faveur d'une chirurgie plus précoce en privilégiant la réparation valvulaire.

Mots-clés : Endocardite infectieuse ; chirurgie.

.جراحة العدوة المكروبية لصمامات القلب:بخصوص203 حالة

الملخص

المقدمة :العدوة المكروبية لصمامات القلب مرض خطير مصحوب بنسبة عالية من المشاكل الصحية و الموت.التشخيص يقوم على عوامل ديك المتغيرة.الأسباب الثلاثة لعملية القلب المفتوح بصفة مستعجلة هي العجز في القلب،عدوة مكروبيه صعبة السيطرة عليها بالمضادات الحيوية وهجرة الميكروب في مناطق مختلفة للجسم.هدف هذا المقال هو إظهار العلامات الإبديميولوجية،الإكلينيكية،الإكوقرافية و التطورية مع إظهار تجربتنا في العلاج الجراحي للعدوة الميكروبية لصمامات القلب**النتيجة**: :نقوم بسرد 203 حالة عدوة مكروبيه لصمامات القلب تمت جراحتها من جانفي 2001 إلى جوان 2015 في عيادة الرياض لجراحة القلب بقسنطينة ودراسة تخص فقط مرحلة النقاهة أي الشهر الأول بعد العملية.معدل العمر هو 42 عاما مع نسبة كبيرة للرجال.المرض الممهد للعدوة هو الروماتيزم القلبي في 40% حالة٠التعرف على المكروب المسبب للعدوى تم في 47% حالة.59 مريض تمت جراحتهم بصفة مستعجلة.تبديل صمامات القلب بصمامات صناعية تم في84% حالةمدة التنفس الاصطناعي أقل من 24 ساعة:69%،مدة المكوث في العناية المركزة أكبر من 03 أيام:28% و60% من المرضى لم يظهروا أي مشاكل صحية في فترة النقاهة**الخلاصة**:مرض خطير يتطور مع الوقت(الجر ثوم المسؤول-العلاج) منما يوجب بحث إبدميولوجي دقيق.التوجه الحالي مع الجراحة المبكرة مع تحبيب تصحيح العيب في الصمام على تغيره.

الكلمات المفتاحية:العدوة الميكروبية، صمامات القلب،جراحة القلب المفتوح .

Pour citer l'article :

Lakehal R, Boukarroucha R, Aimer F, et al. Surgery of infective endocarditis: report of 203 patients. Batna J Med Sci 2016;3(2):112-114. https://doi.org/10.48087/BJMSoa.2016.3212

INTRODUCTION

Infective endocarditis is a serious disease with a high morbi-mortality. Diagnosis is based on modified criteria of Dukes [1]. The main surgical indication in emergency situations is hemodynamic, infectious and embolic complications [2]. The aim of this work is to present epidemiological, clinical and ultrasound characteristics and rapport our experience in order to assess the results of surgical treatment of the disease and to improve management.

METHODS

This is a monocenter and retrospective study of 203 patients operated for infective endocarditis collected between January 2001 and June 2015. This study was only limited to the operative period. Demographic, clinical and lab data were collected, as well as operative and post-operative information. Date were computed using an excel sheet and descriptive statistics were processed.

RESULTS

Overall, 203 patients have been managed surgically, between 2001 and 2015, with a mean of 14 patients/year (table 1). The median age was 42 years (2 – 70 years). There was a male predominance (67%).

Table 1. Number of operated patients per year.

Years	Number
2001	09
2002	09
2003	03
2004	15
2005	07
2006	18
2007	24
2008	14
2009	18
2010	12
2011	10
2012	18
2013	17
2014	22
2015	07

Pre-operative state

Pre-operative functional Status was NYHA III and IV in 47,36 % of cases. The causal heart disease was rheumatic in 40 % cases and 7.88 % had endocarditis on cardiac prosthesis. Lab examination revealed that 15.76 % of patients had an AC/AF. Concerning atrioventricular block, 9 had a grade 1 or 2 and 8 patients had a grade 3.

Concerning the underlying cardiac injury, 87.59 % of patients had valvolupathies, valvular prosthesis in 6.97 % of cases and other conditions in 5.42 % of cases (foreign body, hemodialysis catheter, needle etc.). 90 % of cases were located on the left heart, with the aortic valve affected in 65 % of cases.

The causative germ was isolated in only 47 % of cases. Staphylococcus and streptococcus were the most frequent [1] (table 2) (figure 1).

Table 2. Causative germs of infective endocarditis.

Germ	Staphylocus	Streptoccus	Gram-negative	Brucella	Non identifié	Total
Number	49	33	08	6	138	**203**
Frequency	24,13	16,25	3,94	2,95	53	**100**

The operative act

It consisted of the conservation of the valve in 7.75 % of cases, of cardiac valve prosthesis (mostly mechanical, biologic in tricuspid valve), repair of the annular lesions, reinforced by a patch, and abnormal communications closure by autologous pericardial patch.

Post-operative outcome

Stay in intensive care unit > 72h in 28 % of cases (max 24 days). Duration of intubation was short, ≤ 24h in 69 % of cases, > 48h in 17 % (max 24 days). Post-procedural stay relatively long, > 07 days in 70 % cases (max 72days).

Post-operative results

They were good in more than 70, 54 % of cases. Complications have affected 45 patients but they were fatal only in 13.79 % of cases. Death occured after during the first 72 hours in 73 % of cases.

Post-operative Complications

Rhythm disorder and left ventricular post-operative dysfunctions happened in 20.14 % of cases, redo surgery in 6, 2 % of cases, early desinsertion of prosthesis and atrioventricular block in 5 % of cases, thrombosis of prosthesis, renal failure, infectious resistance, residual leak and respiratory failure in less patients.

Mortality and operative gesture:

26 patients underwent valvular replacements: 4 mitral, 14 aortic, with 4 associated to mitral plasty and 8 mitro-aortic. One patient underwent an aortic plasty with closing of fistula between the aorta and left ventricle, with autologous pericardial patch. One patient underwent a closing of fistula between aorta and right auricle with Dacron patch. The left ventricular function was altered in 24 % of cases. The patients were operated in emergency in 59 cases and in cold conditions in 144 cases. Valve replacement was done in 84.8 % of cases and valve repair in 15.2 % of cases.

DISCUSSION

Infectious endocarditic surgery, even active is no longer discussed in principle. The occurrence of this affection is more important in young men (15 and 50 years). In developed countries, it is the elderly subjects who are most affected with a peak between 70 and 79 years [3]. The operating indication is made in 26.1 % during acute illness

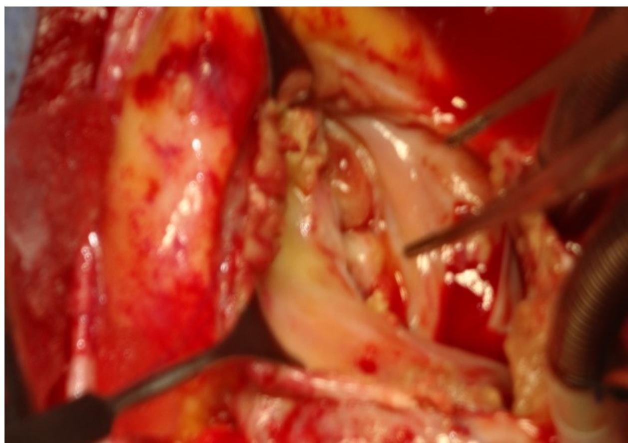

Figure 1. Operative view showing *brucella* tricuspid infective endocarditis.

(25 to 40 % [1], 30 to 50 % [2]). It is essentially made on to the hemodynamic (60.37 %), embolic (24.28 %) and infectious (15.9 %) risks (60 to 70 % for hemodynamic indications and 20 à 30 % for infectious indications) [3]. For the differed endocarditis, 70.9 % of patients were operated in the following year, while in the literature, only 50 % were operated within the two following years [4]. Severity of the lesions was related to the rheumatic preexisting disease and/or the therapeutic delay. The operative results are good in more than 70 % of cases; the operative mortality was 13.72 %, it was of 9.16 % for infective endocarditis on native valve which is in accordance with to the data from the literature (< 10 %) [4].

The mortality rate was 10.5 % in surgery suring the active phase and 15.27 % if intervention occurs following the end of the antibiotic treatment [5]. The operative mortality seems to be also influenced by certain factors: age > 50 years (19% vs 11% for ages between 15 and 50), the female sex (19.51% vs 7.95 % for males), the functional status (stage IV for NYHA: (37.5 % vs 3.79 % for stade II), the existence of AC/AF (14.28 % vs 11.30% for the RSR), the involvement of the aortic valve (15 % vs 9.3% for the mitral valve), the existence of a prothesis (31.25% vs 12.29 % for native valves) [6], the stay in intensive care unit > 72h (67 % deaths), the duration of ventilation > 48h (60 % deaths). These factors reflect mostly the state of the patient. Other factors have been reported in the literature: the insidious nature of the disease, the type of microorganisms (*Staphyloccocus*), the underlying disease, and the delay for obtaining or not of apyrexia after surgery [7].

CONCLUSION

Infective endocarditis is a serious disease, requiring regular studies on its epidemiological aspect. The actual trend is in favor of earlier surgery, privileging the valve repair.

Competing interests: The authors declare that they have no financial or personal relationships that may have inappropriately influenced them in writing this article.

REFERENCES

1. Li JS, Sexton DJ, Mick N, et al . Proposed modifications to the Duke criteria for the diagnosis of infective endocarditis. Clin Infect Dis 2000;30:633– 8.
2. Bonow RO, Carabello BA, Chatterjee K, et al. ACC/AHA2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (writing committee to Revise the 1998 guidelines for the management of patients with valvular heart disease). J Am Coll Cardiol 2006 ; 48:e1–148.
3. Delahaye JP, Loire R, Delahaye F, Hoen B, Vandenesch F. Cardiopathies valvulaires acquises, j. Acar, C. Acar, 17:303, 276.
4. Gandjbakhch, F. Jault : Chirurgie des endocardites infectieuses. La Rev du prat (Paris) 1998, 48.
5. Dodge A, Hurni M, Ruchat P, Stumpe F, Fischer AP, Van Melle G, Sadeghi H. Surgery in native valve endocarditis: indications, results and risk factors. Eur J Cardiothorac Surg 1995 ;9:330–4.
6. Moon MR, Miller DC, Moore KA, Oyer PE, Mitchell RS, Robbins RC, Stinson EB, Shumway NE, Reitz BA. Treatment of endocarditis with valve replacement: the question of tissue versus mechanical prosthesis. Ann Thorac Surg 2001 ;71:1164–71.
7. Dehler S, Elert O. Early and late prognosis following valve replacement for bacterial endocarditis of the native valve. Thorac Cardiovasc Surg 1995;43:83–9.

Cet article a été publié dans le « *Batna Journal of Medical Sciences* » **BJMS**, l'organe officiel de « *l'association de la Recherche Pharmaceutique – Batna* »

Le contenu de la Revue est ouvert « Open Access » et permet au lecteur de télécharger, d'utiliser le contenu dans un but personnel ou d'enseignement, sans demander l'autorisation de l'éditeur/auteur.

Avantages à publier dans **BJMS** :

- Open access : une fois publié, votre article est disponible gratuitement au téléchargement
- Soumission gratuite : pas de frais de soumission, contrairement à la plupart des revues « Open Access »
- Possibilité de publier dans 3 langues : français, anglais, arabe
- Qualité de la relecture : des relecteurs/reviewers indépendants géographiquement, respectant l'anonymat, pour garantir la neutralité et la qualité des manuscrits.

Pour plus d'informations, contacter BatnaJMS@gmail.com

ou connectez-vous sur le site de la revue : www.batnajms.com

Batna Journal of
Medical Sciences