Cardiology

**KEYWORDS:** Infective endocarditis, right heart, congenital heart disease, pacemaker, venous catheter, favorable prognosis.

# RIGHT SIDED INFECTIVE ENDOCARDITIS - ABOUT 4 CASES AND REVIEW OF LITERATURE

Volume-2, Issue-7, July - 2017

| | |
|---|---|
| **A.Lagziri** | Cardiology Department Military Hospital Meknes Morroco |
| **H.Faliouni*** | Cardiology Department Military Hospital Meknes Morroco*Corresponding Author DR.ALAE@hotmail.com |
| **A.Ezzouak** | Cardiology Department Military Hospital Meknes Morroco |
| **B.EL Younassi** | Cardiology Department Military Hospital Meknes Morroco |

*Article History*
*Received: 12.04.2017*
*Accepted: 04.06.2017*
*Published: 10.07.2017*

**Abstract:**
The right sided infective endocarditis (RSIE) is a rare disease, it represents 5-10% of the total number of Infective endocarditis events, mainly occurring in patients with congenital heart disease, patients carrying intravascular catheters or intracardiac devices, and it's frequently seen in injection drug users, especially in those with a HIV positive or immunocompromised status.
We report 4 cases of right sided infective endocarditis in non-addicted patients with a literature review.

## MATERIAL AND METHODS

Our patients were female, ranging in age from 20 to 72 years ; They all had a predisposing factor: congenital cardiopathy, pacemaker, venous catheter, left heart disease. No cases of drug addiction or positive HIV serology were noted.

Tricuspid involvement was predominant (3 cases) with only one case of endocarditis isolated pulmonary Blood cultures were positive in all cases, with the identification of Staphylococcus aureus in 3 patients, and Lactococcus lactis cremoris in one patient.

Transthoracic echocardiography played a key role in the diagnosis endocarditis, it allowed to highlight the vegetation in all our patients. Transesophageal echocardiography was not used. The treatment was initiated according to international recommendations, and relied mainly on an anti-infectious treatment based on bactericidal antibiotic therapy adapted to the isolated organism; Surgical treatment was proposed in only one case with favorable evolution.

There was only one case of death resulting from septic shock following a right endocarditis on pacemaker probe; The evolution was favorable for the other cases. Overall the prognosis of right endocarditis remains better than that of the left side.

Prevention is needed in high-risk patients, especially congenital heart disease, carriers of intracardiac material, based on anti-Oslerian prophylaxis and eradication of any infectious skin, digestive or urogenital; But also through the fight against clandestine abortions and drug addiction.

In our series, we report the observations of 4 patients collected in the cardiology department of HMMI hospital for infective endocarditis of the right heart.

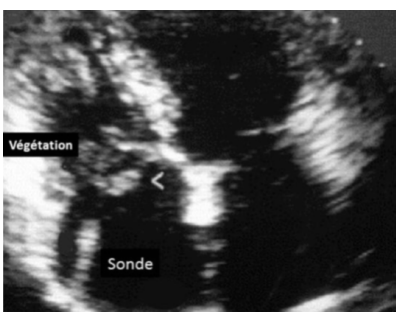


**Figure 1: Vegetation attached to the atrial surface of the tricuspid valve and the atrial pacing probe**

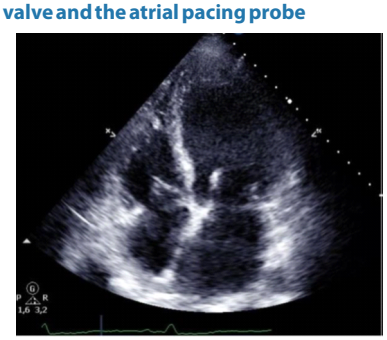

**Figure 2 Appearance of vegetation on the auricular surface of the tricuspid valve**

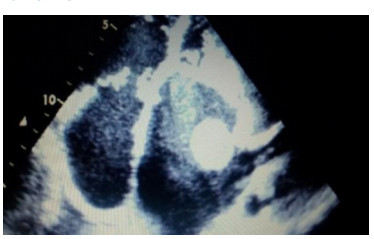

**Figure 3 OG mobile thrombus complicating a tight RM with endocarditis of the left heart and presence of vegetations on the tricuspid valve**

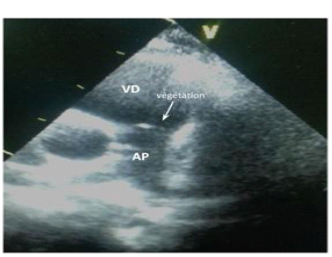


**Figure 4 Appearance of vegetation of the pulmonary valve**

## DISCUSSION

1) Epidemiology

a) Frequency

Endocarditis of the right heart remains rare compared to localizations left, they represent 5 to 10% of all AEs (3) (4).

Heart-right AEs are the exclusive preserve of patients with heart disease congenital patients, patients with intravascular devices, and drug users (5).

Drug addiction is the main predisposing factor in countries developed with an incidence of 2-5% per year per region of endocarditis infectious 86% of which concern the right heart (6).
(b) Location (7) (8) (9) (10)

The tricuspid valve is the preferred seat of the right endocarditis, it is more than 65% of cases.

Pulmonary involvement is most often associated with tricuspid exceptionally isolated where it accounts for less than 1.5% of Aes. Our data are consistent with those of the literature. We noticed 3 cases of tricuspid endocarditis, and one case of isolated pulmonary endocarditis.

c) Age and sex
In non-addicted patients, age and sex vary:
In the series of NKOUA et al. in Brazzaville, involving 12 cases of IE of the heart right, all patients were female, with an average age of 21.8 (11).

In our series, all patients were female, age was understood
2) Etio-Pathogeny
2-1) Entrance door
a) Endocarditis of the right heart of the post partum and the post abortum

Genital endocarditis, once very common, has been declining in recent decades, especially in Western countries. On the other hand, in the under-medicalized countries, post-partum and post-abortion remain one of the common causes of right endocarditis; This is because in the countries of the world, and particularly in rural areas, the initial source of infection is genital infection, occurring in childbirths and especially abortions, which are regularly performed at home, by unqualified personnel, and poor aseptic conditions.

In a Moroccan study conducted at Ibn Rochd University Hospital, reporting observations of 6 patients with infectious endocarditis of the right heart: 2 cases of endocarditis were noted in the post-natal series of a pathological pregnancy, and another case after a voluntary termination of pregnancy (16).

In our series, this is the case in the patient of the observation n ° 3 which presents a tight mitral stenosis in ACFA complicated of a thrombus intra-left auricle and which presented on the 10th day of the post partum a microbial transplant on the tricuspid valve.

b) Iatrogenic causes
They are currently growing more and more because of invasive actions. b-1) Endocarditis on Pacemaker Infectious endocarditis of the right heart is a complication of cardiac pacemakers, they can be severe with a mortality ranging from 10 to. In a study conducted in Spain by Carlos Ortiz et al. Out of 121 cases endocarditis of the right heart: 65 cases were carriers of intra-cardiac device (85% pacemaker, 11% implantable defibrillator) (12).

This form of IE has become more common with the widening of indications The infectious transplant on PM would mainly occur (90% of cases) at the time when the pacemaker is implanted, even in cases where the infection is revealed years later. More rarely, it would be secondary to bacteremia of another origin (13).

Indeed, the contamination of the stimulator probe is most often via a skin entry door through the propagation of the infectious process by contiguity from the box of the housing, during implantation or during a manipulation of the probes. As was the case with our patient with a pacemaker, who had an abscess from the complicated lodge of a Oslerian graft, the probe and the right heart.
b-2) Endocarditis on central venous catheters In our study, we report the observation N ° 2, where the installation of a catheter to implantable chamber, in a chemotherapy patient, was complicated by the occurrence of endocarditis of the right heart.

According to a review of the literature by Shi-Min Yuan including 241 patients with infective endocarditis of the right heart, 7 entrance doors were central venous catheters (2.9%) (14).

b-3) Endocarditis after cardiac procedures
The risk of AE after cardiac surgery mainly concerns the risk of AE on prosthetic valves (15).

Prosthetic valve IEs are the most severe form of AEs and
occur in 1 to 6% of patients with prosthetic valve replacement (16)

2-2) The responsible germs
Staphylococcus aureus is the microorganism most often found in infectious endocarditis of the right heart (60-90%) (3), well in front of Pseudomonas aeruginosa, other Gram-negative bacilli, fungi or streptococci (5) .

A review of the literature (4) found 74 cases of Staphylococcus aureus on 167 blood cultures or 44.3%, 18 cases of Streptococcus or 10.8%. In our study, blood cultures incriminated Staphylococcus aureus in 3 cases, the 4th case was a surprise in identifying Lactococcus lactis cremoris (LLC), a subspecies of Lactococci.

LLC endocarditis is extremely rare, and occurs almost in a field of predilection: an underlying immunodepression as well as consumption of unpasteurized dairy products. Our patient could be involved in this type of endocarditis, which is part of framework of iatrogenic EI at LLC.

In our view, CLL is an emerging opportunistic pathogen. Her responsibility in this first Moroccan case and in the cases identified in the literature is not in doubt (18).

2-3) The Terrain of Occurrence
a) The previous cardiac condition

Endocarditis of the left heart is usually associated with lesions In contrast, endocarditis of the right heart often occurs on healthy valves, in case of underlying heart disease it is much more congenital than acquired heart disease (3) (17). In our observation reports the occurrence of AE on a pulmonary valve congenitally narrowed after being balloon dilated in an adult.

b) Intravenous drug addiction
IE has been recognized as an intravenous drug use complication since 1950, intravenous drug addiction has become a major predisposing factor, and significantly increases the incidence of AEs, especially in developed countries In our observations, there were no cases of drug abuse and all
HIV serology were negative.

3) The positive diagnosis
3-1) Clinical manifestations

The clinical picture of endocarditis of the right heart can be misleading because of the possible discretion of the right signs .We do not find the classic picture of endocarditis, but a prevalence of fever and pleura pulmonary manifestations.

Right IE is often acute, primitive, revealed or complicated by

pulmonary involvement. The usual manifestations are persistent fever, bacteremia, multiple septic pulmonary embolism resulting in chest pain, cough or hemoptysis ...

Septic pulmonary embolism is present in 90% of cases (19),
In our series no case of pulmonary embolism was found, this is probably underestimated because patients did not benefit from chest CT angiography.

Senna 3-
2) Para Clinical diagnosis
The diagnosis is based on blood cultures and echocardiography.
Previous studies have shown a sensitivity of ETT> 80% (20) (21) in the detection of right heart IE, and with the technological progress experienced by the latter, ETO does not add not much in this setting! There is only one prospective study (118) in which ETT and ETO have been compared with 48 injecting drug users suspected of having a right AE, the diagnostic yield of the two approaches was the same: 34 vegetation were identified in 22 patients by both techniques. Note that some vegetation could be characterized more precisely by ETO When vegetation is visible on the ETT and the clinical evolution is simple, it is not worth doing an ETO because abscesses and pseudo aneurysms are unusual results in this subset of patients (4). In our study, no case of addiction was recorded, ETT was far enough to diagnose right AE in all 4 cases without recourse

4) Treatment
4-1) Medical treatment
The anti-infectious treatment of right heart IEs is identical to that of Aes of the left heart, in all cases it must cover the Staphylococcus aureus.

Initial treatment includes penicillin-resistant penicillin, vancomycin or daptomycin, depending on the local frequency of Methicillin-resistant Staphylococcus aureus (MRSA) and in combination with gentamicin Once the pathogenic microorganisms responsible are isolated, the treatment needs to be adjusted. A treatment of 4 to 6 weeks must be performed when the following criteria are filled: slow clinical or microbiological response (> 4 days).EI right complicated by an ICD, vegetation> 20mm, insufficiency
Acute Respiratory, Metastatic Infectious Foci Outside the Lungs (including empyema), or extra cardiac complications (renal failure).
Treatment with antibiotics other than penicillinase-resistant penicillin.
Intravenous toxics with severe immunosuppression (Cd4 < 200 / mm3)

EI of the associated left heart.
Some of these situations mentioned above have been found in our patients, thus explaining the prolonged duration of the treatment at home (1).

4-2) Surgical treatment
In general, avoid surgery, but this may be necessary in following circumstances:

ICD secondary to severe tricuspid insufficiency with response insufficient to diuretic treatment.

EI due to microorganisms that are difficult to eradicate (eg fungi), or persistent bacteremia for at least 7 days despite adequate antibiotic therapy.

Vegetation on the tricuspid valve> 20mm and persists after recurrence pulmonary embolism.

One of our patients endured the surgery, the gesture consisted of a mitral valve replacement (MVR), thrombectomy of the left atrium thrombectomy and removal of tricuspid valve vegetation.

Since the studies of Arbulu et al , the surgical spirit of the tricuspid valve in IE is rather conservative and is based on three principles (1): Debridement of the infected area or vegetectomy.

Valve repair whenever possible, avoiding equipment artificial. Valve replacement indication is rarely used. (20)

## Conclusion:

At the end of this work, which focused on four observations of right endocarditis, Patients collected at the cardiology department at the HMMI hospital in Meknes, associated with a review of the literature, we could highlight several important points about the infective endocarditis of the right heart:

Right endocarditis is less common compared to endocarditis of the left heart and essentially affects the tricuspid valve.

It is a pathology that reaches the people carrying material intracardiac strains or central catheters, as well as patients immunocompromised.

People with congenital heart disease are at high risk for this infection.

The clinical picture is dominated by pleuro-pulmonary manifestations,

but sometimes it is revealed by sepsis. Echocardiography is a key element for diagnosis, surveillance and the assessment of the prognosis. Despite the fact that ETO is more efficient The treatment is based primarily on antibiotic therapy. Outside of complications, a bactericidal antibiotherapy allows most often the healing. The use of surgery, although rare compared to endocarditis of the left heart, is often necessary in the presence of hemodynamic or infectious despite well-conducted medical treatment Evolution and prognosis are often favorable.

The prevention of patients at risk is crucial,

## REFERENCES


(1) F. Delahaye. Endocardite infectieuse. EMC Cardiologie. Volume 11-013-B-10.2012
(2) DELAHAYE J-P. Endocardites infectieuses. In : GODEAU P. Traité de médecine. 3e édition. Paris : Médecine-sciences Flammarion, 1996. p.1578-1585
(3) Gilbert Habib, Patrizio Lancellotti, Manuel J. Antunes, MariaGraziaBongiorni,Jean-PaulCasalta, FrancescoDelZotti, Raluca Dulgheru, Gebrine El Khoury, PaolaAnna Erbaa, Bernard Iung, Jose M. Mirob, Barbara J. Mulder, Edyta Plonska-Gosciniak, Susanna Price, Jolien Roos-Hesselink, Ulrika Snygg-Martin, Franc Thuny, Pilar Tornos Mas, Isidre Vilacosta, and Jose Luis Zamorano. Guidelines forthe management of infective endocarditis. The Task Force for the Managementof Infective Endocarditis of the European Society of Cardiology (ESC). EuropeanHeart Journal 2015
(4) R. Mesbahi, A. Chaara, M. Benomar. L'endocardite infectieuse du coeur droit : Apropos de 10 observations. Arch Mal Coeur 1991 ; 84 : 355-9.
(5) P. Parize, J.-L. Mainardi. Les actualités dans l'endocardite infectieuse. La Revuede médecine interne 32 (2011) 612–621.
(6) K. Akinosoglou et al. Native valve right sided infective endocarditis. EuropeanJournal of Internal Medicine 24 (2013) 510 –519.
(7) M.P. Ranjith et al. Isolated pulmonary valve endocarditis : A case report and review of the literature. Journal of Cardiology Cases 8 (2013) 161–16.
(8) Davide Moreira , Emanuel Correia, Bruno Rodrigues, Luís Santos, Joana Capelo,Luís Abreu, Luís Nunes, Jorge Oliveira-Santos. Isolated pulmonary valve endocarditis in a normal heart. Rev Port Cardiol. 2012;31(9):615----617.
(9) R.C.-C. Wong et al. An unusual right-sided endocarditis : A case report ofeustachian valve endocarditis. International Journal of Cardiology 109(2006)
(10) Edward Passen, Zekun Feng Pharm. Cardiopulmonary manifestation of isolatedpulmonary valve infective endocarditis emonstrated with cardiac CT. Journal ofCardiovascular Computed Tomography 9 (2015) 399e405.
(11) NKOUA J.L, GOMBET.T, KIMBALLY Y-KARY et AL. Endocarditis infectieuses tricuspidiennes à Brazzaville. A propos de 12 cas. Ann. Cardiol. Angeiol 1993,42(10), 550-3
(12) C. Ortiz et al. Clinical classification and prognosis of isolated right-sided infective endocarditis. Medicine Volume 93, Number 27, December 2014
(13) X. Duval, C. Leport, D. Klug. Endocardite sur sonde de Pacemaker. La Lettre de l'Infectiologue - Tome XVIII - n° 2 - mars-avril 2003.
(14) Shi-Min Yuan. Right-sided infective endocarditis: recent epidemiologic changes.Int J Clin Exp Med 2014;7(1):199-218.
(15) G. DE GEVIGNEY, C. POP AND J. P. DELAHAYE. The risk of infective endocarditisafter cardiac surgical and interventional procedures. European Heart Journal(1995) 16 (Supplement B), 7-14.
(16) Gilbert Habib, Franck Thuny, Jean-François Avierinos. Prosthetic valve endocarditis : current approach and therapeutic options. Progress in Cardiovascular Diseases, Vol. 50, No. 4 (January/February), 2008: pp 274-281.
(17) V.K. Bahl, R.S. Vasan, P. Jain and S. Shrivastava. Spectrum of right-sided infective endocarditis: an Indian experience. International Journal of Cardiology, 35

(1992)187-193.
(18) N Elmalki Berrada, I Asfalou *, A Zaimi, A Lagziri, A Ezzouak, B El Younassi.Endocardite infectieuse à Lactococcus lactis cremoris ( à propos d'un cas). Service de cardiologie. Hopital Militaire Moulay Ismail Meknes. * Sce de cardiologie HMIMd V Rabat.
(19) Trouillet J, Chastre J. Endocardite tricuspide. Evolution épidémiologique,particularités étiologiques. Arch Mal Coeur Vaiss 2002 ; 106 : 16-8.
(20) Ginzton LE, Siegel RJ, Criley JM. Natural history of tricuspid valve endocarditis:A two-dimensional echocardiographic study. Am J Cardiol 1982;49:1853-9.