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Research Article

Adolescent and Adult Congenital Heart Disease in Guinea

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Abstract

Introduction: The objective of this study was to describe the clinical, echocardiographic, therapeutic and evolution aspects of adult CC in the cardiology department of the Ignace Deen National Hospital.

Methodology: This was a descriptive and retrosprospective study carried out at the Cardiology Department of the Ignace Deen National Hospital, over a period of two years and (11) months, between January 2017 to November2019. All patients with a diagnosis of congenital heart disease confirmed by cardiac Doppler echo were included in the study.

Results: We collected 30 cases of congenital heart disease during our study period. The mean age of our patients was 45.7 ± 19.56 years with extremes of 16 and 80 years. The most common age range was 26-35 years. The sex ratio M/F was 1.5. Dyspnea was the mode of revelation with a frequency of 66.67%. Cardiac Doppler Echo was our reference examination for confirmation of the diagnosis of CC. AIC predominated with a frequency of 36.67% followed by VIC 26.67%. A medical treatment was prescribed in all our patients, none benefited from the surgery. Main complications were heart failure (40%), atrial fibrillation (10%), and pulmonary arterial hypertension (36%).

Conclusion: Congenital heart disease is still discovered late in Guinea, despite improved diagnostic methods. It is imperative to design multidisciplinary strategies to ensure early detection and optimal management of these heart diseases.

Keywords: *Congenital Heart Disease; Adolescent; Adult; Echography*

Introduction

Congenital heart disease are the most common birth defects, present in around 0.8% of newborns [1].

Thanks to advances in medicine, more and more children with Congenital heart disease are reaching adulthood [2]. These Congenital heart disease, commonly called «GUCH» (adults with congenital heart disease), include not only malformations treated in childhood which decompensate secondarily, but also asymptomatic heart disease at birth that becomes symptomatic late, sometimes in adulthood. [2]. The overall prevalence of Congenital heart disease in adults is between 2.8/1000 and 4.9/1000 [3].

Congenital heart disease determine a public health problem in Africa [4]. Their care often proves difficult due to the low socio-economic level of the populations and the lack of suitable technical platforms [4]. The diagnosis is made in first intention by the Doppler echocardiography which is nowadays, the essential examination for the diagnosis, the therapeutic indications and the monitoring of the Congenital heart disease [4,5]. The assessment of lesions requires other techniques including CT scan, magnetic resonance imaging, as well as cardiac catheterization [6].

A better knowledge of adult Congenital heart disease in a cardiological hospital environment, as well as their therapeutic future, should make it possible to optimize their management. In Guinea, there are very few data on adult Congenital heart disease.

Objective of the Study

The objective of this work was to describe the clinical, echocardiographic, therapeutic and evolutionary aspects of Congenital heart disease in adolescents and adults.

Methodology

This was a retrospective descriptive study carried out in the cardiology department of the Ignace Deen National Hospital, over a period of 35 months (January 2017 to November 2019).

All patients aged at least 16 years, followed in the department, in whom cardiac Doppler ultrasound had demonstrated Congenital heart disease were included.

The parameters studied were as follows: socio-demographic data (age, sex, origin), clinical data (functional and physical signs), echocardiography (anatomy of lesions, mechanism, quantification of Congenital heart disease, impact on others structures of the heart, the associated lesions, the size of the cardiac chambers and the thickness of the walls in diastole and systole), proposed therapies (drugs, surgery) and progressive (complications, death).

Data were collected, processed and analyzed using Epi info 3.5.4 and Microsoft Excel 2010 software.

Results

We collected 30 cases of CC during our study period. The mean age of our patients was 45.7 ± 19.56 years with extremes of 16 and 80 years. The most represented age group was between 26 and 35 years old (Figure 1).

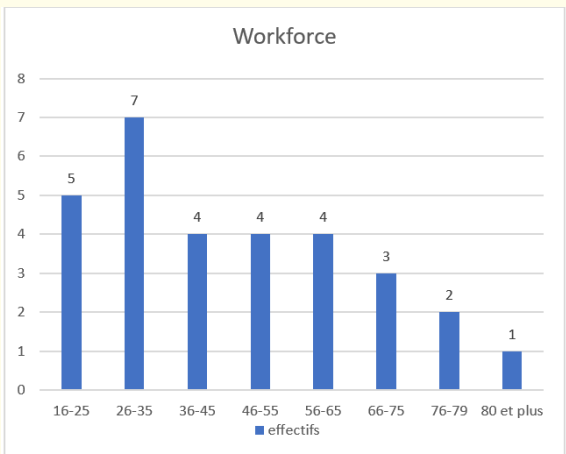

Figure 1: *Distribution of patients by age.*

There was a male predominance (60%) with a sex ratio M/F of 1.5. Dyspnea was the most frequent mode of disclosure (66.67%), followed by palpitations (50%). General signs were dominated by cyanosis (20%), and digital hippocratism (10%). A heart murmur was found in 76.67% of cases, and signs of heart failure in 46.27% (Table 1).

Clinical features	Workforce	%
Circumstance of discovery		
Dyspnea	20	66,67
Palpitations	15	50,00
Heart murmur	12	40,00
Fortuitous	11	36,67
Cough	10	33,33
Physical asthenia	10	33,33
Chest pain	7	23,33
Faintness	3	10,00
Physical signs		
Heart murmur	23	76,67
Condensation syndrome	7	23,33
IC sign	14	46,67
Cyanosis	6	20,00
Digital hippocratism	3	10,00

Table 1: *Distribution of patients according to the circumstances of discovery and physical signs.*

On the EKG, the rhythm was sinus (86.67%). Complete arrhythmia was noted by atrial fibrillation (3 cases), ventricular extrasystoles (3 cases), and atrial (1 case). Right ventricular hypertrophy (HVD) was found in 11 (36%) cases, and left ventricular hypertrophy in 7 cases (23.33%). Right and left atrial hypertrophies were found in 10 (33%) and 5 cases (16.66%).

Cardiac Doppler echo showed inter atria communication (36.67%), inter ventricular communication (26.67%), tetralogy of Fallot (16.67%), and atrioventricular communication in 13.34% of patients. case (Table 2). The inter atria communication were ostium secundum type in 8 cases (Figure 2) and ostium primum type (3 cases). inter ventricular communication were peri-membranous (7 cases), and muscular (1 case). The CAV was complete (2 cases) and incomplete in 2 other cases. There were 3 cases of pulmonary valvular stenosis, and 2 cases of aortic bicuspid (Figure 3). Among the cyanogenic heart diseases, there were 5 cases of tetralogy of Fallot and 1 case of Agenesis of the pulmonary valve (Figure 4). The ultrasound abnormalities related to the impact of Congenital heart disease are grouped together in table 3. It was a tricuspid insufficiency in 15 cases (50%), dilation of the right cardiac chambers (figures) (46.67%), and pulmonary arterial hypertension in 11 cases (%). Medical treatment had been prescribed for all patients. The molecules used were diuretics (60%), ACE inhibitors (40%), beta blockers (36.67%), antiplatelet agents (6.66%), vitamin K (3.33%). No patient in our series had received surgical treatment.

The course was marked by the onset of heart failure: 12 (40%) cases, pulmonary arterial hypertension: 11 (36. 66%) cases, and 7 (23. 33%) cases of rhythm, including 3 cases of atrial fibrillation.

Types of CC	Workforce	%
CIA	11	36,67
CIV	8	26,67
Tetralogy of Fallot	5	16,67
CAV	4	13,34
Persistence of the ductus arteriosus	1	3,33
Pulmonary stenosis	3	10,00
Dextrocardie	1	3,33
Pulmonary valve agenesis	1	3,33
Aortic bicuspid	2	6,66

Table 2: *Distribution of patients by type of congenital heart disease.*

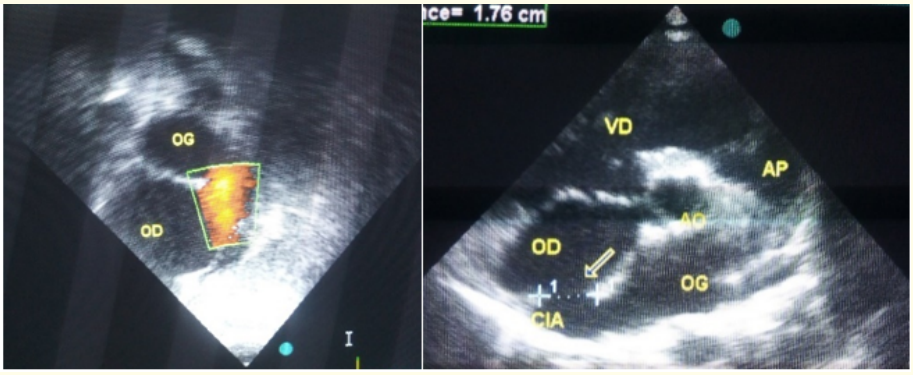

Figure 2: *According to the CIA door.*

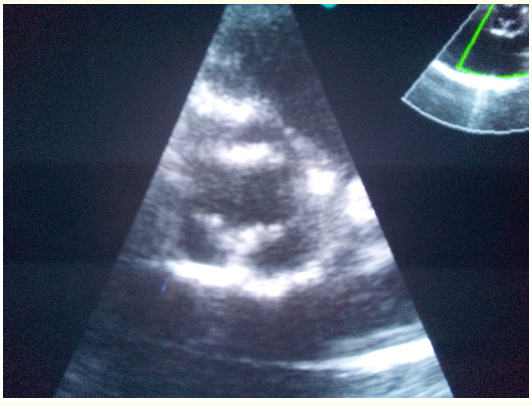

Figure 3: *Aortic bicuspid with posterior raphe.*

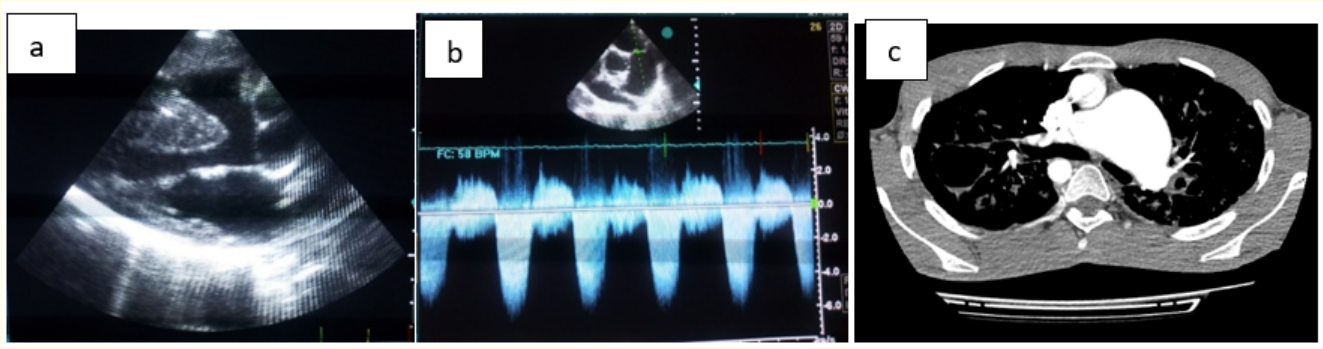

Figure 4: *Agenesis of the pulmonary valve with open septum (a: sub-aortic VIC, b: pulmonary stenosis and leakage, c: aneurysmal dilatation of the pulmonary artery).*

Repercussions	Workforce	%
Dilation of the left heart chambers	10	33,33
Dilation of the right heart chambers	14	46,67
Dilation of the 4 cavities	3	10,00
Impaired LV function	1	3,33
Dilation of the pulmonary artery	12	40,00
Tricuspid insufficiency	15	50,00
Mitral regurgitation	11	36,67
Aortic insufficiency	10	33,33
Pulmonary insufficiency	2	6,67
Pulmonary arterial hypertension	11	36,67
Low abundance pericardial effusion	3	10,00

Table 3: *Distribution of patients according to the impact on the heart.*

Discussion

The prevalence of CC in adolescents and adults of 0.5%, found in this series is consistent with the data in the literature which find prevalences that vary between 0.28 and 0.49% [3,7]. However, Mbaye., *et al.* in Senegal report a higher prevalence of 0.75 [8].

The mean age of the patients was 45.7 ± 19.56 years with extremes of 16 and 80 years. Patients aged between 16 and 35 were the most represented. The patients in this series were older than those in the Mbaye and Favilli series, which reported an average age of 41.8 ± 19.3 years and 36.16 years [8,9]. In the series reported by Silversides and Engelfriet., *et al.* the subjects were younger with a mean age of 29 and 27.9 years) [10,11].

Unlike Mbaye., *et al.* [8], which reported a female predominance, it is a male predominance that was found in this series with a sex ratio M/F = 1.5.

The reasons for consultation were dominated by dyspnea (66.67%), which is in agreement with the data in the literature [12], and could be explained by the high frequency of left-to-right shunted CCs in this series. The other circumstances of findings were palpitations (50%), fortuitous findings (40%), heart murmurs (36.67%). Almost half of the patients (46.67%) presented with signs of heart failure, which could be due to delayed diagnosis and management.

The inter atria communication (36.67%) was the most frequently encountered Congenital heart disease, a result similar to those reported by Mbaye in Senegal and Giannoglou in Greece, with 43.3% and 38% respectively [8,12]. It was ostium secundum type AIC (72.73%), which is contrary to the result reported by Barry., *et al.* who found 2 cases of ostium secundum type AIC in a number of 5 patients [13]. In Nigeria, the most common Congenital heart disease was inter ventricular communication (31%) according to Ejim [14]. The VICs (26.67%) in our series were mainly peri-membranous (87.50%). The other heart diseases found were: tetralogy of Fallot (16.67%), CAV (13.34%), pulmonary stenosis (10%). Note a case of pulmonary valve agenesis was discovered in a 29-year-old man.

The evolution was marked by the onset of heart failure (40%), PAH (36.66%). The mean pulmonary arterial pressure was 53.73 mm Hg. Mbaye in Senegal [8], reported a frequency of PAH of 50%, and Duffel [16], a significantly lower prevalence (4.2%). Difficulties in accessing care and the low socioeconomic status of patients could be the cause of these late discoveries at the stage of complications.

Supraventricular arrhythmias (10% atrial fibrillation) were less frequently observed than reported by Mbaye, Favilli, and Verheugt with 18%, 14.8%, and 16%, respectively [8,9,15].

Symptomatic medical treatment had been instituted: diuretics, ACE inhibitor, and beta blockers. No patient had received surgical treatment because heart surgery has not yet been performed in Guinea. This present work will increase the number of cardiology services across the country and equip them to detect and then manage congenital heart disease.

Conclusion

Congenital heart disease discovered in adolescents and adults is common in our country. It is imperative to put in place multidisciplinary strategies, and to optimize diagnostic and therapeutic means in order to improve the early detection and management of these heart diseases.

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