Geriatric Morbidity and Mortality in the Cardiology Department of the General Idrissa Pouye Hospital in Grand Yoff from 1 June 2018 to 30 June 2020: A Report on 383 Cases

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ABSTRACT

Introduction: In Senegal, as elsewhere, cardiovascular diseases have become the leading cause of morbidity and mortality, particularly amongst the elderly.

Methodology: This was a retrospective and descriptive study with analytical aims, of patients aged 60 and above hospitalised in the cardiology department of the Idrissa Pouye Hospital in Grand Yoff between June 1st, 2018 and June 30th, 2020.

Results: Our study population consisted of 383 patients, 228 men (59.5%) and 155 women (40.5%) with an average age of 71.2 years. The prevalence of geriatric hospitalization was 63.5%. Financial responsibility was mainly assumed by the family (56.4%). The main cardiovascular risk factors were a sedentary lifestyle (84.3%), arterial hypertension (59.7%) and diabetes (25.3%). The most frequent symptoms were dyspnoea (58.5%), chest pain (41.9%) and cough (24.8%). Laboratory work-up revealed anaemia (41%), dyslipidaemia (76.3%), hyperuricaemia (52.9%), hyperglycaemia (27.7%), hyperazotaemia (24.5%) (should we not add the result of serum creatinine, which reflects the kidney more than azotemia?), and positive serum troponin (91.7%). The diagnoses were dominated by acute coronary syndrome (29.2%), hypokinetic dilated cardiomyopathy (14.9%) and cardiac arrythmias . Infectious lung disease (12.8%) was the main concomitant pathology. More than half the patients (60.6%) had presented with a polypathology. The drugs used were dominated by anticoagulants (58.7%), ACE inhibitors (56.7%) and statins (52.48%). The average number of drugs used was 6, and the average length of hospitalisation was 8 days. The case fatality rate was 12.3%, and advanced age (octogenarians with p = 0.005) and diagnosis of ischaemic stroke (p = 0.001) were associated with the risk of death.

Conclusion: Good control of risk factors makes it possible to reduce the morbidity and mortality of these cardiovascular pathologies.

Keywords: Morbidity and Mortality; Elderly People; Senegal

Abbreviations: HOGIP: Hospital in Grand Yoff; APO: Pulmonary Oedema; ECG: Electrocardiographic; CVA: Cerebrovascular Accident; ACS: Acute Coronary Syndrome; CHU: Chaker University Hospital Centre; ANSD: National Statistics and Demography Agency; WHO: World Health Organization; BMI: Body Mass Index; AVB: Atrioventricular Block; AF: Atrial Fibrillation; ARF: Acute Renal Failure; CRF: Chronic Renal Failure

Introduction

Cardiovascular diseases are now a major public health problem in all countries. While acute diseases have not been completely eradicated, Senegal is increasingly confronted with chronic non-communicable diseases, which pose a real public health problem. Among these diseases, cardiovascular diseases have become the leading cause of morbidity and mortality in the medical environment, particularly among the elderly, with an incidence reaching 65% after the age of sixty-five (65) [1]. Senegal, like every other country in the world, will not be spared by the ageing of its population. Indeed, demographic growth among the elderly (3.5%) exceeds national demographic growth (2.5%), reflecting the demographic dynamism of this population category [2]. As a result, cardiovascular diseases will be proportional to these demographic data, exacerbating the state of poverty as a result of expenses that put a heavy burden on the meagre retirement pension or the already insufficient family budget [2].

These pathologies are generally detected late because of difficulties in accessing specialist medical consultations, medication for treating hypertension and diagnostic resources (scanners, etc.). In addition to the multiple pathologies, with the risk of poly-medication and iatrogenic pathologies, there is no co-ordination of drug prescriptions, "the person is cut up into slices of specialities: heart, kidney, brain...". Yet these cardiovascular diseases linked to risk factors (diabetes, unhealthy diet, sedentary lifestyle, smoking, etc.) can be prevented. They often resort to traditional medicine, with the risk of worsening cardiovascular diseases. For this reason, we undertook a study to assess the prevalence and describe the characteristics of elderly people suffering from cardiovascular pathologies in the cardiology department of the Idrissa Pouye Hospital in Grand Yoff.

Materials and Methods

Study Setting

Our study was carried out in the cardiology department of the Idrissa Pouye Hospital in Grand Yoff (HOGIP). The hospital is made up of several medical and surgical departments, including the cardiology department, which includes a functional exploration centre. The department includes an outpatients and functional explorations sector, an inpatients sector with an average of 500 inpatients per year, and an angiography and conventional rhythmology room. The inpatient sector operates 24 hours a day and has a capacity of twenty (20) beds. One (01) cardiology intensive care unit with five (05) beds.

Type and Period of Study

This was a retrospective and descriptive study with analytical aims carried out during the period from June 1st 2018 to June 30th 2020.

Study Population

Our study included patients hospitalised in this department, aged sixty (60) and above, whose records were available for proper use. Patients who met the age criterion but whose records were lost or unusable were not included.

Parameters Studied

The data were collected from the patients' files using a survey form that included socio-demographic and epidemiological data, medical and surgical history, the patient's background, lifestyle and habits, and clinical, laboratory, therapeutic and outcome data.

Data Entry and Statistical Analysis

The data were entered using Sphinx software and analysed using Excel. The analysis was both descriptive and analytical. Chi-square tests were used, depending on their applicability, to compare proportions. The test was significant if $p<0.05$.

Ethical Considerations

Our work was carried out with the authorisation of the Head of the Cardiology Department. The data were collected confidentially and anonymously.

Results

Out of 1064 hospitalisations, 676 involved patients aged 60 or over. However, three hundred and eighty-three (383) patient records from this geriatric population could be used.

Epidemiology

The prevalence of geriatric hospitalisation was 63.53%, with an average age of 71.17 years, as shown in Table 1, and a male predominance (59.53%, n=228), with a sex ratio of 1.47. The sexagenarian age group was most represented (47.26%, n=181). The sexagenarian age group was the most represented (47.26% n=181). Two-thirds (2/3) of this geriatric population were retired or unemployed, and more than half had not attended school (53.87%, n=195/362). The socio-economic level was average (49.34%, n=186/377), and most of the costs were covered by the patients and their families (56.40%,

n=216), with little covered by the Sésame scheme. The majority of patients were referred by hospitals (54.05%, n=207) but also by private clinics (27.57%, n=51).

Table 1: Distribution by age group.

Age Range	Number of patients(N)	Percentage (%)
60-69	181	47,26%
70-79	128	33,42%
80-89	68	17,75%
+de 90	6	1,57%
Total	383	100,00%

Background, Known Medical Conditions, Habits and Lifestyle

The main cardiovascular risk factors found were a sedentary lifestyle (84.33%), arterial hypertension (59.27%, n= 227), diabetes mellitus (25.33%, n= 97) and the combination of diabetes and hypertension (18.20%, n= 69), as shown in Table 2. As for smoking, this was a fairly long-standing condition and was mainly found in men, as shown in Figure 1.

Table 2: Distribution of patients according to background and history (N=383).

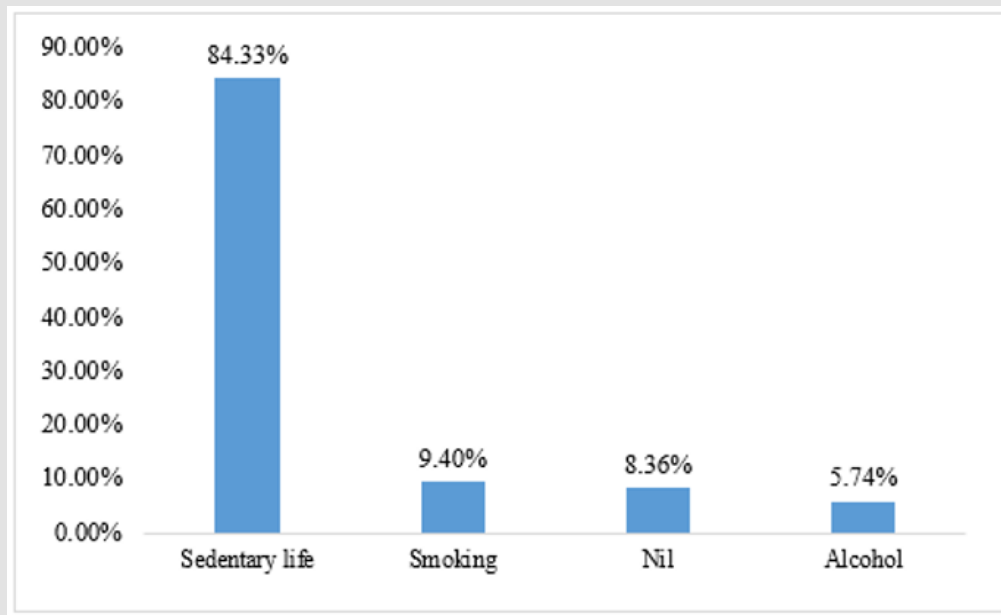| Background and history	Number of patients (N)	Percentage (%)
HTN	227	59,27%
Diabetes	97	25,33%
Cardiopathy	78	20,37%
ACS	25	6,53%
Ischemic Stroke	25	6,53%
Obesity	18	4,70%
Asthma	14	3,66%
Neoplasia	11	2,87%
CRF	7	1,83%
Pacemaker bearer	7	1,83%
Others	62	16,19%

Figure 1: Distribution of patients by lifestyle (N=383).

Clinically

The major symptoms were dyspnoea (58.49%, n= 224), chest pain (41.78%, n= 160), cough (24.80%, n= 95), oedema of the lower limbs (21.41%, n= 82), vomiting (10.97%, n= 42), palpitations (7.31%, n= 28) and dizziness (7.05%, n= 27). Tachycardia was present in (33.94%, n= 130). The main causes of hospitalisation, as shown in Table 3, were coronary heart disease (21.67%, n= 83) dominated by ST+ ACS, dilated cardiomyopathy (14.88%, n= 57), rhythmic heart diseases dominated by atrial fibrillation (14.88%, n= 57) and finally conduction heart disease (11.49%, n= 44) dominated by complete AVB. Pulmonary embolism (6.79%, n= 26) and ischaemic stroke (5.74%, n= 22) were also present.

Table 3: Distribution of patients by main diagnosis.

Main Diagnosis	Number of patients (N)	Percentage (%)
Acute Coronary Syndrome ST+	83	21,67%
Hypokinetic Dilated Cardiomyopathy	57	14,88%
CAFT/AF	57	14,88%
Complete symptomatic AVB	44	11,49%
Dilated Ischemic Cardiomyopathy	43	11,23%
ACS ST-	29	7,57%
Pulmonary Embolism	26	6,79%
Ischemic Stroke	22	5,74%
Lower Limb Thrombophlebitis	20	5,22%
Non dilated Ischemic Cardiomyopathy	18	4,70%
Hypertensive Cardiopathy	15	3,92%
Atrial flutter rhythm disorder	11	2,87%
Chronic cor pulmonale	11	2,87%
Valvular Cardiopathy	10	2,61%
Others	57	14,88%

The Main Concomitant Diagnoses

Were infectious pneumonitis (12.79%, n=49), particularly in patients aged over 70, urinary tract infections (3.39%, n=13), predominantly in women, prostate disorders (3.13%, n=12) and chronic renal failure (1.83%, n=7). However, 60.57% of patients had two or more chronic diseases. The main acute complications were acute pulmonary oedema (APO) (1.57%, n=6) and mixed shock (1.37%, n=5).

Laboratory Findings

Anaemia was present in 40.99% of patients, with a statistically significant predominance of women (chi square test p= 0.0004); dyslipidaemia was noted in 3/4 (76.29%, n= 251) of patients, with a predominance of hypo-HDLaemia (29.79%, n= 98); hyperuricaemia affected 52.92% of patients, and renal function was impaired in 26.15%, in most cases secondary to functional renal failure. Hyperazotemia was noted in 24.46% of patients (n= 90). Hyperglycaemia was present in 27.67% of patients (n= 96) and hypoglycaemia in 4.61% (n= 16). Troponin levels were recorded in 170 patients and were positive in 91.76%. With regard to kalaemia, 9.92% of patients presented with hypokalaemia and 7.24% with hyperkalaemia.

Electrocardiographic (ECG) abnormalities were dominated by cardiac rhythm disorders (55.22%, n= 201), repolarisation disorders (43.13%, n= 157) and conduction disorders (33.24%, n= 121). The main radiographic abnormalities were cardiomegaly (58.14%, n= 200); hilar overload (21.51%, n= 74); pulmonary opacities (16.86%, n= 58) and pleural effusions (3.49%, n= 12). Cardiomyopathy was found on ultrasound in more than half of the patients 67.24% (n= 234) of whom 35.34% (n= 123) represented dilated cardiomyopathy and 31.90% (n= 111) non-dilated cardiomyopathy 35.88% (n= 122). Coronary lesions were present in 93.33% (n= 42) of patients. Thoracic angioscanning showed pulmonary embolism in 36 patients (9.40%). The cerebral angioscan performed on 29 patients showed abnormalities such as cerebrovascular accident (CVA) and cortical atrophy in 6.27%. Venous Doppler ultrasound of the lower limbs was performed on 26 patients, and thrombosis was found in 22 of them.

Therapeutic Aspects

Anticoagulation was prescribed in 58.75% (n= 225) of patients, most of whom had acute coronary syndrome (ACS), ischaemic dilated cardiomyopathy, atrial fibrillation or ischaemic stroke. The next most commonly prescribed drugs were ACE inhibitors (56.66%, n= 217), followed by statins (52.48%), antiplatelet agents (50.91%, n= 195) and beta-blockers (36.81%, n= 141). More than half the patients (61.09%) were taking 6 or more drugs. Non-medicinal means were dominated by definitive cardiac pacing performed in 9.92% of patients and coronary angioplasty performed in (6.01%, n= 23), external electric shock (2.09%, n= 8) and placement of a temporary pacing lead (1.04%, n= 4). Patients could benefit (n= 343 or 89.56%) from 2 or even 3 or more hospitalisations respectively (n=35 or 9.14%); (n=3 or 0.78%), (n=2, 0.52%).

Outcome

The majority of patients had a favourable outcome, with an overall mortality rate of 12%. However, mortality was very high in patients with ischaemic stroke (p=0.001). The average length of hospitalisation was 8 days [1-25 days]. The re-hospitalisation rate was 10.44%, 50% of which was attributable to the same pathology as the first hospitalisation, 25% to ST+ ACS and the remaining 25% to other cardiovascular conditions. Factors contributing to death were advanced age (p=0.005), sex (p=0.015) and diagnosis of ischaemic stroke (p=0.001).

Constraints

The difficulties encountered were the absence of certain files in the archives and the incompleteness of the data.

Discussion

Prevalence of Geriatric Hospitalisation

The prevalence of geriatric hospitalisation was 63.53%, which corresponds to approximately 2/3 of hospitalisations in the cardiology department. These results in cardiology departments show that cardiovascular diseases are the prerogative of the elderly and that advanced age is a risk factor for the onset of these conditions.

Socio-Demographic Data

The mean age of our study population was 71.17 ± 7.95 years. The same applies to the study of cardiovascular risk factors at the Hédi Chaker University Hospital Centre (CHU) in Tunisia, where 150 elderly subjects were found to have an average age of 71.8 ± 5.07 years [3]. Elderly subjects are therefore exposed to cardiovascular disease, since advanced age alone constitutes one of the non-modifiable cardiovascular risk factors. The results of our study also showed a predominance of the 60 to 69 age group with 47.46%. This result is found in most surveys of elderly people in Africa, reflecting the relative youth of our population [4-6]. Our study population was predominantly male, with a sex ratio of 1.47. Similar results have been observed in other studies [6-9]. In our study population, 41.87% were retired and 74.93% were not in paid employment. In Senegal, the retirement age is 60. As people get older, they stop working, especially when their children can provide for the family. Furthermore, the job market is not conducive to the integration of older people, despite their experience. At this age, older people devote more time to social and religious activities [6].

It should be noted, however, that 25.07% of our cohort continued to work despite their advanced age. Some elderly people are forced to work to support their families because they have no children to look after them. In addition, retirement pensions in Africa are relatively modest, especially for those who have worked outside the public sector. These pensions are not sufficient to cover the family burdens that weigh on these people until a relatively advanced age. The majority of patients (82.50%) were married. The widowhood rate was 14%, divorced 2% and single 1.5%. These results are almost similar to those of Diallo S., who found that married people made up the majority of the study population (79.9%) [6].These proportions would be consistent with the realities of our society, where marriage among the elderly is a guarantee of social security and responsibility.

Widows in our study were mainly women, as in most studies in Africa [9]. In our Senegalese context, the remarriage of elderly men is tolerated by the community, and indeed it is the children themselves who encourage and favour the remarriage of their father, whereas the remarriage of a widow is not usually accepted by the children [9]. More than half of our study population (53.87%) had not attended school, and this situation reflects the current level of schooling in Senegal [10]. According to the national statistics and demography agency (ANSD) [11], at national level, only 190563 (8.9%) of the 531718 older people had received formal education. Taking all levels together, 91.1% of older people have no education. The low level of education is thought to be the result of difficult access to the schools that existed at the time, parents' poverty and, above all, their lack of awareness of the usefulness of education. Like literacy, educational attainment declines with age. Among the elderly, only 1.1% have a tertiary education [11].

Origin of Financial Support

Care was essentially provided by the family (56.40%). In Senegal, the majority of the population has a low economic level, and this burden of care exacerbates the poverty of families through appalling health expenditure [3]. One of the concerns of political leaders is to protect the population against financial disaster and impoverishment resulting from the use of healthcare services. Faced with the financial barrier created by direct payment for care, Senegal, like other African countries, has since the early 2000s introduced policies to abolish payment for certain categories of service or population. One example is "Plan Sésame", a policy of free healthcare for people aged 60 or over, introduced by the health authorities in 2006. Paradoxically however, Plan Sésame was little used or even under-used in our study (15.933%) for various reasons: lack of awareness of the Plan among beneficiaries, restriction of free services by health facilities, abandonment of the Plan by health facilities due to lack of reimbursement, etc. [12]. This situation may be responsible for non-compliance or even abandonment of treatment or resort to traditional medicine [12].

Cardiovascular Risk Factors

In our study population, a sedentary lifestyle was the main risk factor in 84.33% of patients. Sedentary lifestyle is found in almost all elderly people due to the significant reduction in physical activity with age, accentuated by retirement; professional activity is thus interrupted. The national survey on risk factors for non-communicable diseases STEPS 2015 [13] found that 66.6% of the people questioned in the study did not engage in any intense physical activity leading to an increase in heart rate. These results show that the practice of sport is not highly developed in Senegal. Moreover, the rampant, uncontrolled and poorly planned urbanization is not conducive to the creation of playgrounds, leisure areas or physical activity areas. Local authorities are more preoccupied with allocating land for housing without considering the living conditions. According to the (WHO), lack of physical activity can have serious consequences on health. Around two million deaths worldwide are attributed to physical inactivity each year, prompting the WHO to issue a warning: "physical inactivity may be one of the 10 leading causes of death and disability worldwide".

Hypertension was present in 59.27% of patients and was one of the main cardiovascular risk factors. The STEPS survey found a rate of 50.3% of hypertensives in the 60-69 age group, reflecting the high prevalence of hypertension in elderly subjects [13]. Hypertension was also predominantly male, with 51.5% of men affected compared with 48.5% of women. The STEPS survey found a predominance of women [13]. Diabetes was present in 25.33% of patients, most of whom had type 2 diabetes. The STEPS survey found an overall prevalence of diabetes of 2.1% and a prevalence of 6.2% in the 60-69 age group [13]. In fact, the prevalence of diabetes has increased in the elderly due to increased life expectancy and changes in lifestyle (sedentary lifestyle,

smoking, unhealthy diet, etc.). In the Algerian study by Chami et al of diabetes in a geriatric population of 393 elderly patients, the prevalence was 26.7 ± 0.01%, essentially type 2 diabetes [14]. These results are similar to our own. In fact, since diabetes is a cardiovascular risk factor, it increases the rate of hospitalisation in cardiology for elderly subjects because of its direct complications on the heart and blood vessels.

Active smoking or smoking cessation of less than 3 years was found in 9.40% of patients, and concerned men only. The STEPS survey found an overall prevalence of smoking of 5.9%, more prevalent among men (15.6%) than women (0.4%); the 60-69 age group had a prevalence of 5.3% [13]. According to the WHO, tobacco is responsible for 20-25% of cardiovascular deaths. Smoking is particularly predisposing to the risk of coronary heart disease and arterial disease of the lower limbs. The benefit of stopping smoking on the risk of acute vascular events is rapid. After three years of smoking cessation, the risk of a coronary event in an ex-smoker is not significantly different from that in a non-smoker. However, the probability of developing atheromatous lesions remains correlated with the amount and duration of smoking [3].

Smoking poses a major public health problem, as it is responsible for around five million deaths a year, a third of which, i.e. about one million, occur in developing countries. Between 2020 and 2030, the annual number of deaths will rise to ten million, 70% of which will be in developing countries [3]. Alcoholism was also found in 5.74% of patients, mainly men. This parameter is difficult to assess because of our religious context, Senegal being a Muslim country and therefore forbidding the consumption of alcohol, which remains a taboo subject. To avoid stigmatisation or discrimination, alcohol consumers prefer not to talk about it, let alone report it. The STEPS survey found that the vast majority of adults claimed never to have drunk alcohol (96.2%) [13]. Obesity was poorly assessed in our cohort because the body mass index (BMI) was not recorded for all patients.

Clinical Profile

The main symptoms found in our study population were dyspnoea (58.49%), chest pain (41.78%), cough (24.80%) and oedema of the lower limbs (21.41%). These clinical signs are warning signs in cardiology. Dyspnoea was predominant in our study because most of the patients were in either left heart failure or congestive heart failure. The main cardiovascular conditions were: coronary heart disease (29.24%), dilated cardiomyopathy (14.88%), rhythmic heart diseases dominated by atrial fibrillation (14.88%) and conduction heart diseases dominated by complete atrioventricular block (AVB) (11.49%). Acute coronary syndrome (ACS) was found in 29.24% of patients, including 21.67% with ST-segment elevation and 7.57% without ST-segment elevation. N'GETTA et al, in their 2016 study of acute coronary syndromes in sub-Saharan Africa, found a prevalence of 13.5% [15]. These results reflect the increase in acute coronary heart disease in recent years, as well as the increase in the incidence of ACS with age [15].

In fact, in sub-Saharan Africa, epidemiological data on acute coronary syndromes (ACS), the most serious form of coronary disease, are rare. These conditions are emerging in our regions as a result of an epidemiological transition, mainly due to changes in lifestyle in both urban and rural areas (motorised transport, reduced physical activity, industrial diets rich in sugars and fats, etc.) and more effective diagnostic methods [15]. The hypokinetic dilated cardiomyopathy found (14.9%) was for the most part the direct long-term consequence of acute coronary disease. Atrial fibrillation (AF) was found in 14.9% of patients. AF is the most common cardiac rhythm disorder, particularly in elderly subjects or those with heart disease [16]. The median age of onset was 75 years, with approximately 70% of AF occurring between the ages of 65 and 75. Over the past 20 years, the percentage of hospital admissions for AF has increased by 66%, which is mainly linked to the ageing of the population, the increase in heart disease and improvements in arrhythmia diagnosis tools [17]. In our cohort, 11.49% had symptomatic complete atrioventricular block. This condition is also very common in the elderly, as shown by the Mbaye A et al study on definitive cardiac pacing: 64.6% of patients with complete AVB were over 60 years of age. AVB could be linked to tissue degeneration [16].

In our population, we found patients who, in addition to their cardiovascular disease, had other associated pathologies, the main one being infectious pneumonitis (12.79%), and most of the patients were over 70 years of age. The incidence of lower respiratory infections rises steadily with age, from 30 cases/1,000 inhabitants/year in young people to 140/1,000/year in people over 75. The incidence of pneumonia rises from 4 to 30 cases in these same populations. Diagnosis of lower respiratory infection is not always easy in the elderly, whose symptoms may be atypical, sometimes masked by the decompensation of an underlying pathological condition [18]. This was followed by urinary tract infections, the prevalence of which was 3.4% in our cohort, with a predominance of women. The prevalence of urinary tract infection increases with age, sex, lifestyle and the existence of co-morbidities. In women living in geriatric institutions, it varies from 20 to 50%, depending on the degree of physical and mental dependence and co-morbidities. In men, the frequency of bacteriuria also increases, but to a lesser extent than in women. However, in geriatric institutions, this frequency tends to be the same as in women [19].

The clinical presentation is often atypical and urinary signs, when present, are difficult to interpret. When faced with a clinical picture suggestive of infection, the clinician can perform a urine dipstick test, which can rule out the diagnosis with a small margin of error. If the test is positive, a urine cytobacteriological examination is requested. In our study, it is explained by the advanced age of the subjects, but also by the co-morbidity of cardiovascular disease, diabetes and prostatic pathologies. The latter were found in 5.3% of the men in our cohort, which can be explained by the increase in prostate disorders, especially benign prostatic hyperplasia, with age.

Polypathology in Elderly Subjects

Polypathology was found in 60.6% of patients. In Togo, the study by Apeti et al on a geriatric population found polypathology in 80% of patients [20], as did the study by Hamadouche et al in Algeria, which found a prevalence of 80.1% in a population of people aged between 65 and 74 and 91.6% in subjects aged over 75 [21]. Our result can be explained by the chronic morbidity of the elderly, dominated by chronic cardiovascular disease and diabetes. Diabetes and hypertension are associated in 18.20% of patients, further increasing cardiovascular risk. Polypathology is responsible for a cascade of decompensation and polymedication. It requires management by a multidisciplinary team (cardiologist, nephrologist, infectiologist, etc.).

Laboratory Profile

Anaemia was found in 41% of patients, with a predominance of women in the 60 to 69 age group. Anaemia is a very common pathological situation in geriatric practice and is most often due to multifactorial causes (inadequate intake, inflammation, edentulism, comorbidities, etc.) [22]. The lipid profile was altered in the majority of our cohort (76.3%). The predominant lipid disorder was hypoHDLemia found in 56.53% of patients, followed by hyperLDLemia (29.8%). The study by Thiombiano et al found a prevalence of dyslipidaemia in the Guéoul population of 63% in subjects aged between 65 and 80 years, with a predominance of hypoHDLaemia followed by hyperLDLaemia [23]. Dyslipidaemia is high in our regions, despite poverty, in both urban and rural areas. This is explained by a poor lifestyle (sedentary lifestyle, low consumption of fruit and vegetables, high-fat diet, fast food, food additives, etc.) [13].

Dyslipidaemia increases with gender, sedentary lifestyle, hypertension, diabetes and obesity [23]. Our study population was made up of diabetics, hypertensives and sedentary people, all of whom are exposed to lipid disorders and further increase cardiovascular risk. In our study population, 27.7% had hyperglycaemia, which is linked to the high number of diabetics who come to the cardiology department in glycaemic decompensation, but also to the fact that hyperglycaemia may be discovered in an elderly subject (diabetic or not) admitted for an emergency. Hyperglycaemia may have a variety of aetiologies, with immediate and long-term life-threatening consequences [24].

The mean uricemia in our study population was 78.5 and hyperuricemia was found in 52.92% of patients. Most of the patients with hyperuricaemia had atrial fibrillation, coronary artery disease and/or dilated cardiomyopathy, and were most often suffering from cardiac decompensation. Heart failure is characterised by over-activation of xanthine oxidase, leading to increased release of free radicals and hyperuricaemia [25]. This justifies the high prevalence of hyperuricaemia in our study population, the majority of whose patients had decompensated heart failure. In addition, there is a tendency for hyperuricaemia to occur in patients with diabetes and/or hypertension [25]. Studies have demonstrated the impact of hyperuricaemia on impaired coronary reserve and systolo-diastolic function, intra-hospital and long-term mortality, the occurrence of cardiovascular events and the risk of re-hospitalisation [25].

Renal function was impaired in 26.15% of patients. Of these patients, 3/4 had functional acute renal failure (ARF) and 1/4 had chronic renal failure (CRF). The risk of acute renal failure in the elderly is increased by changes in renal function and the effects of various chronic diseases such as diabetes, hypertension and obstructive urological disorders, the incidence of which increases with age [26], as well as by "nephrotoxic" drug interactions. In our cohort, acute renal failure was mostly related to acute heart failure and underlying chronic conditions.

Morphological Investigations

Electrocardiographic abnormalities were dominated by rhythm disorders, present in 55.2% of patients; regular sinus tachycardia, tachyarrhythmia due to atrial fibrillation and ventricular extrasystoles. Repolarisation disorders (43.13%) were highly prevalent in our study population. Changes in the ST segment (more or less significant horizontal, descending or ascending sub-shift) and the T wave (flattening or inversion) are frequent in elderly subjects, occurring in 16 to 25% of cases [27]. The Q wave of necrosis present in 15.4% of patients was most often related to myocardial infarction, but was also latent in some patients. In fact, in elderly patients, they are more often isolated or latent, and several studies have shown that 21% to 68% of myocardial infarctions in elderly patients have no clinical manifestations, with the incidence increasing with age [27,28]. The non-negligible prevalence of LVH was related to the number of hypertensive patients in our study, with age, duration and severity of hypertension being predictive factors for LVH [28].

Cardiac ultrasound revealed severe LVEF (left ventricular ejection fraction) abnormalities in 16.8% of patients, and 67.2% of echocardiograms revealed cardiomyopathy. Dilated cardiomyopathy predominated and the direct cause was myocardial ischaemia; the main causes of non-dilated cardiomyopathy were chronic arterial hypertension and acute coronary syndrome. The majority of our study population had radiographic cardiomegaly (58.1%), which may be due to the large number of dilated and hypertrophic cardiomyopathies. Hilar overload was found in 21.5% of patients and was a direct consequence of acute cardiac decompensation. Lung opacities were present on a large number of radiographic images, mainly reflecting pneumopathy. In our study population, only 11.7% of patients benefited from coronary angiography, which revealed the presence of coronary lesions in 93.3% of cases.

Therapeutic Data

Medications played a key role in the therapeutic management of patients, and the most commonly used class of drugs was the anticoagulants (LMWH (low molecular weight heparin), VKA (vitamin

K antagonists) and DAA (direct oral anticoagulants)) prescribed for 58.75% of patients. The main indications for this anticoagulation were acute coronary syndrome, followed by dilated cardiomyopathy (especially ischaemic), atrial fibrillation and stroke. This prescription is therefore well justified, as anticoagulation in geriatric medicine is a public health problem, since the elderly population is most at risk of developing diseases requiring anticoagulant treatment (venous thromboembolism, atrial fibrillation, bed rest, prolonged decubitus, etc.) [29,28]. Angiotensin Converting enzyme inhibitors were also a class of choice for antihypertensive treatment in the cardiology department. They were prescribed for more than half the patients (56.7%). These results are better than those of the survey by Philippe et al on the use of major therapeutic classes in secondary prevention in elderly patients, which showed a rate of use of ACE inhibitors of 42% [30]. Our situation can be explained by the high prevalence of hypertension and acute coronary events in our study population.

Statins (52.5%), antiplatelet agents (50.9%) and beta-blockers (41.8%) were used mainly for secondary prevention of acute coronary syndrome. However, our results were lower than those of the Philippe et al survey, which found 61%, 75% and 55% respectively for each class [30]. In our cohort, more than half the patients were taking 6 or more drugs, with an average of 6 drugs in the study population as a whole. Polydrug therapy secondary to polypathology makes management more complex, since it increases the risk of drug interactions and hence of iatrogenic pathologies. For certain diseases, non-medicinal means were essential in their management, such as definitive cardiac stimulation (10%), which is essential in the treatment of symptomatic AVB, and coronary angioplasty (6%) for severe coronary disease. The low rate of coronary angioplasty in our study population, despite the indication in many patients, was linked to financial problems in ensuring that it was performed in most cases.

Outcome

The overall outcome of patients in our study was favourable, with a discharge rate of 86%. Mortality was 12%. This was almost the same as in the survey by Damorou et al, who found a general mortality rate of 11% in a cardiology hospital in Lomé [31]. The pathologies causing death were dominated by ischaemic stroke, followed by atrial fibrillation and finally ST+ coronary syndrome. The risk of death was statically correlated with advanced age, particularly in the octogenarians (p=0.005) and the sexagenarians (p=0.015), but also with the diagnosis of ischaemic stroke (p=0.001). Although stroke mortality is high in all countries worldwide, it is even higher in middle- and low-income countries. The study by K. Touré et al in the neurology department of the Fann University Hospital found a fatality rate of 37.5% for ischaemic stroke [32].

This stroke mortality rate can be explained by the delay in treatment, the lack of technical resources and specialists, and also by the inadequate training of general practitioners in health facilities, who tend to refer all patients with this condition to neurology. The length

of hospitalisation was around 8 days, with 45.4% staying between 4 and 7 days. The survey by Yameogo et al in Ouagadougou, Burkina Faso, found an average of 10 days in cardiology [33]. During our study period, 10.44% of patients had returned one or more times for re-hospitalisation, and almost all for the same condition. Twenty-five (25%) of the causes of rehospitalisation were attributed to acute coronary syndrome through recurrence or the development of secondary cardiomyopathy of ischaemic origin.

Conclusion

Cardiovascular disease is a major public health problem in Senegal, as elsewhere, due to its incidence, prevalence, costly management and mortality, making it the leading cause of morbidity and mortality. They are linked to vascular risk factors including advanced age, smoking, obesity, a sedentary lifestyle, poor diet and co-morbidities. Yet these diseases can be prevented. It is more a question of primary prevention and screening, as our limited resources do not allow us to provide adequate care for these conditions.

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