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Multiple Myeloma and Human Immunodeficiency Virus: Experience of Côte D'ivoire

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Abstract

Background: No studies have been conducted concerning Multiple Myeloma (MM) associated Human Immunodeficiency Virus (HIV) in Côte d'Ivoire.

Aim: To describe the peculiarities of association MM-HIV.

Materials and methods: We conducted a retrospective and descriptive study with duration of 8 years, from January 2009 to December 2017 in Abidjan. We included the case of MM with HIV serology positive. 10 patients among 101 cases of MM were infected by HIV, prevalence of 9.9%.

Results: There were 6 mens and 4 females. The average age was 53 years with extremes 31 and 75 years. Clinical signs were bone pain (10 cases), anemia (10 cases), pathological fractures (6 cases) and tumor syndrome (3 cases). Biologically, 8 patients had a hemoglobin level<6 d/dl, 6 had a hypercalcemia and 3 had renal failure. Radiological signs noted a Geode in all patients which 5 were multiple. 7 patients had been stadified ISS III. Therapeutic responses noted Complete Response (one case), Very Good Partial Response (two cases), and Partial Response (5 cases).

Conclusion: MM associated HIV in Côte d'Ivoire is most to young people with severe manifestations. The treatment seems good with the use of conventional chemotherapy.

Keywords: Multiple myeloma; HIV infection; Côte d'Ivoire

Introduction

Multiple myeloma (MM) represents 1% to 2% among cancers and 10% to 20% of hematological malignancies [1,2]. In Côte d'Ivoire, MM represents 0.9% of all cancers and the hospital prevalence was estimated at 2.9 cases/years [3-5]. The etiologies of this affection are still unknown. Among the risk factors, the viruses were incriminated, with a role of cofactors at the origin of the malignant clone. MM-HIV coexistence was also found in patients with EBV [6]. Rettig et al. recently reported the relation between myeloma and the HH-8 virus [5]. The relation between HIV and some malignancies such as non-Hodgkin's lymphoma and Kaposi's disease has been reported [7,8]. However, the pathogenic mechanisms remain controversial. The relative risk of developing myeloma in HIV-infected patients is higher than in the general population [9]. In Africa, few studies have been conducted concerning the association MM-HIV. It's why we conducted this study which objective was to describe the epidemiological, clinical, biological and therapeutical particularities of MM in the patient with HIV infection in Côte d'Ivoire.

Materials and Methods

We performed a retrospective and descriptive study in Abidjan (Côte d'Ivoire) at the department of clinical hematology. This study concerned the files of patients with multiple myeloma followed during the period from January 2009 to December 2017. We included the cases of MM diagnosed according to SWOG or IMWG criteria with the HIV serology positive. The data were collected based on medical files of patients available in the archives. The information collected was fill in on a standardized survey form that included epidemiological, clinical, biological and therapeutic data while ensuring the anonymity of the patients and the confidentiality of the information collected. During this period, 101 cases of MM was followed in our department among 10 cases were infected by HIV and represented our sample.

The parameters of our study were demographic data (age, sex, occupation, exposure factors), clinical data (reasons of hospitalization, assessment of general state, pain syndromes, the temperature and the search for neurological signs). Biological parameters included the results of blood cell counts, of bone marrow examination, electrophoresis of serum and urinary proteins, immuno ixation of serum and urinary proteins, serum calcium, LDH levels. We studied the radiological parameters such as lytic lesions and bone fractures. The prognosis of these patients was established according to International Staging Score stadi ication. For the treatment, we studied the different protocols used during this period. We study the therapeutic responses according to the evaluation criteria of the IMWG which de ined: Complete Response (CR), Very Good Partial Response (TBRP), Partial Response (PR), Stable Disease (MS), and Progression Disease (MP).

Data were analyzed using Epi-Data 3.1 so tware French version and Word and Excel 2013. The calculation of overall survival was performed according to the Kaplan Meier method.

Results

During the period of our study, MM was found in 10 patients with HIV-infection. Table I summarizes the distribution of patients according to demographic data. The table II summarizes the Clinical, biological and radiological features of patients. Concerning the table III, it describes the Therapeutics protocol and responses.

Variables	Numbers of cases
Ages (years) : Average and extremes 53 [31-75]	
<40	2
40-50	4
51-60	1

>60	3
Sex	
Male	6
Female	4
Professional occupation	
Executives	4
Trader	3
Housewives	2
Others	1
Marital status	
Married	6
single	1
widowers	1
Divorced	1
Others	1
Exposures factors	
Toxic products	3
Rubber industry	3
Pesticide/herbicide	2
Familial dysmitosis	2

Table 1: Demographic features of patients.

Variables	Numbers
Clinical Symptoms	
Bone syndrome	
Bone pain localized	2
Diffuse bone pain	8
Pathological fracture	6
Performance status	
0 and 1	1
2 and 3	2
4	6
Tumor syndrome	
Lymphadenopathies	2
splénomegaly	1
Others signs	
Fever	3
Neurological deficit	2
Biological symptoms	
Blood cells count	
Leucopenia	4
Lymphopenia	3
Neutropenia	3
Hemoglobin (g/dl) level :	
<6	8
10-Jun	1
>10	1
Types of monoclonal immunoglobulin and light chain	
Ig G	8
Ig A	1
Kappa chain	7
Lambda chain	3
Others biological signs	
Hypercacemia	5
Renal failure	3
Radiological signs	
1 Lytic lesion	5
Multiple lytic lesion	5
ISS stadification	
I	0
II	3
III	7

Table 2: Clinical, biological, radiological and prognosis features of patients.

Variables	Numbers
Therapeutical protocol	
Thal-Dex	4
VMCP+Thal	3
VMCD	2
MP+Thal	1
Therapeutical reponses	
Complete Remission	1
Very Good Partial Remission	2
Partial Remission	5

Stable disease	1
Progression	1

Table 3: Therapeutic protocol and therapeutic response of patients.

Discussion

Our study was retrospective; concerned the records of patients with HIV infection associated multiple myeloma. During the period of our study, 101 cases of multiple myeloma were diagnosed among which 10 were infected with HIV. The prevalence was 9.9% and was relatively high compared to that of Sitas et al. in South Africa who found 4.3% of a total of 114 patients with multiple myeloma in two years [6]. In another study conducted in Denmark by Gregersen et al., no case of MM with HIV infection was found in 10 years [8]. In West Africa, Côte d'Ivoire is the country most affected by HIV. The differences observed in our study raise the problem of the link between HIV and multiple myeloma. Several epidemiological studies conducted in the United States, Italy and Australia have shown that, the risk to develop the MM in the patients infected by HIV infection was 2- to 5- high compared to the general population [9]. Concerning the sex, there were 6 men and 4 female. The sex ratio was 1:5. The average age was 53 years old with extremes of 31 and 75 years old. Elderly patients over 50 years were majority. The same results was found respectively by Woodrow et al. in the United States and Yee et al. in London who reported a sex ratio of 1.5 each [10,11-13]. In the series of Ndomocrah et al. in Bangui, the predominance of sex was female [14]. Although this difference may be explained by the size of these authors' samples which was small compared to ours, the predominance of males in MM was reported by several authors [1-3,5]. However, the high prevalence of HIV infection in the female population in Africa and the high relative risk of HIV myeloma allows for discussion of the sex distribution in the population of patients with HIV-associated MM [8,15]. The age of our patients corroborated at the studies of Kumar et al. and Fiorino et al. According to these authors, MM in the patients infected with HIV occurs at a younger age, unlike MM itself which is a disease of elder subject [4,13,16,17]. Clinically, all our patients were symptomatic and had bone pain (100%). Anemia was consistently found in all patients, 8 (80%) of whom were associated with signs of severity. 2/3 had an alteration of general state. The other signs were fever (30%); neurological de icit (20%), lymphadenopathy (20%) and splenomegaly (10%) were found. These symptoms were associated with myeloma in several African, European and Asian study series [18,19]. Unlike these authors, the signs founds in our series was severe, in addition to the tumor syndrome such as lymphadenopathy and splenomegaly unusually described during MM. The severity of the clinical signs in our study could be explained by the delay of diagnosis due to lack of health infrastructure close to the population but also the low economic income which is a brake to honor a consultation. As a result, the viral infection (HIV) evolves over time with severe symptoms such as tumor syndrome. Thus the presence of the tumor syndrome observed during the HIV infection would make difficult the diagnosis of MM. The severe anemia is of multifactorial origin, linked to the involvement of progenitors by the HIV virus and the secretion of inhibitory cytokines. Serum calcium was high in 5 (50%) patients and 6 (60%) patients had a pathological fracture. The biological and radiological signs observed in our series corroborated the data of the literature and are attributed on the irstly to the pathogenic mechanisms and physiopathology of these two affections whose association in the same patient constitutes a gravity factor [13,18-20].

During HIV infection, there is a chronic stimulation of the immune system mediated by T lymphocytes. According to Hilbert et al., T cells lymphocytes induce terminal differentiation of B cells lymphocytes which could contribute to tumor proliferation and explain the severity of the multiple MM-HIV association. Secondly, the study of Yee et al. revealed that there would be increased secretion of certain cytokines including IL6, b FGF and VEGE whose activities potentiate the mechanism of proliferation of the myeloma clone [13].

As for the prognosis, the majority of our patients were stadified ISS III. This stage is attributed to the pejorative prognosis during MM. Therapeutically; the different protocols used were MP-THAL protocol, VMCP-Thal protocol, VMCD protocol and THAL-DEX protocol. 8 (80%) patients had a good therapeutic response while 2 patients had a bad therapeutic response. These good therapeutic responses include the CR (one case), VGPR (2 cases), PR (5 cases). Recent studies have not noted a particularity in the treatment of MM in the patients infected with HIV [9,12,14]. No therapeutic changes or drugs doses were found in the literature during the MM-HIV association. None of our patients had used the protocol including bortezomid. In an American study performed by Costa et al., the protocol combining bortezomide+cyclophosphamide+dexamethasone led to a good therapeutic response in 95% of cases [21]. These different results showed a good tolerance of chemotherapy and a good therapeutic response in patients with MM and infected with HIV both for the conventional chemotherapy and proteasome inhibitor such as bortezomide.

Conclusion

This retrospective study performed over a period of 8 years showed that the prevalence of MM in the patient infected with HIV is not negligible in Côte d'Ivoire and concerns more the young people. This association potentiates the clinical, biological and radiological signs and penalizes the prognosis. The treatment seems to be good with chemotherapy.

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