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Insights in Blood Disorders

Monoclonal Gammopathies in Clinical Hematology in Lomé, Togo: Epidemiology and Diagnostic Profile

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ABSTRACT

Introduction: *monoclonal gammopathies (MGs) encompass a heterogeneous group of disorders ranging from malignant plasma cell neoplasms to indolent conditions such as MGUS. While extensively characterized in high-income countries, data from sub-Saharan Africa remain scarce. We conducted the first comprehensive study of MGs in Togo to describe their epidemiological and diagnostic features.*

Methods: *we performed a retrospective chart review of patients diagnosed with MGs in the Department of Clinical Hematology at CHU-Campus, Lomé, between June 2011 and April 2024. Inclusion required confirmation of a monoclonal component by serum protein electrophoresis and immunotyping, with complete clinical records available. Data collected included demographics, clinical presentation, laboratory findings, and final diagnosis.*

Results: *Thirty-nine patients were identified, corresponding to an annual incidence of approximately three new cases. The mean age was 60 years (range, 35–75), with a slight female predominance (sex ratio 0.95). Most cases (84.6%) were diagnosed based on clinical manifestations, whereas only 11.3% were detected incidentally. IgG was the predominant heavy-chain isotype (89.7%), most frequently associated with kappa light chains (56.4%). Multiple myeloma accounted for 82.1% of diagnoses, followed by MGUS (12.8%) and Waldenström's macroglobulinemia (5.1%).*

Conclusion: *in this first series from Togo, MGs were most often diagnosed at a symptomatic stage, with multiple myeloma predominating and MGUS rarely identified. The predominance of IgG-kappa is consistent with global trends, but the scarcity of asymptomatic cases highlights underrecognition and limited screening in resource-limited settings. Expanding diagnostic capacity and awareness is essential to improve early detection and patient outcomes in West Africa.*

Keywords

Epidemiology, Monoclonal gammopathy, Multiple myeloma, Sub-Saharan Africa, Togo.

Introduction

Monoclonal gammopathies (MGs) are defined by the presence in serum and/or urine of an immunoglobulin composed of a single type of heavy chain or a single type of light chain [1]. This immunoglobulin may be either intact or consist of a fragment, such as a truncated heavy chain lacking its corresponding light chains, or isolated light chains with abnormally low or high molecular weight [2].

MGs are frequently discovered incidentally or during clinical and biological investigations that require serum protein electrophoresis (SPEP). The underlying etiology may influence the clinical presentation, and a deterioration of general health status is frequently observed [3]. Regardless of the circumstances

of detection, the identification of a monoclonal immunoglobulin warrants a stepwise diagnostic approach, based on the combined analysis of serum and urine proteins, to establish its charge homogeneity and isotype [4]. The central challenge when faced with an MG is to determine its etiology [5].

A monoclonal immunoglobulin may be found in three distinct contexts: (i) malignant monoclonal gammopathies, which represent the principal concern (multiple myeloma, Waldenström's macroglobulinemia, plasma cell leukemia, light-chain amyloidosis, lymphomas, chronic lymphocytic leukemia, etc.); (ii) monoclonal gammopathies associated with non-lymphoid conditions (acute or chronic viral infections, autoimmune diseases, neoplasms, etc.); and (iii) monoclonal gammopathy of undetermined significance (MGUS) [6-8].

In Togo, Kahler's disease (multiple myeloma) is the most extensively studied monoclonal gammopathy, particularly in the fields of rheumatology [9] and hematology [10]. To our knowledge, no comprehensive study has yet addressed MGs with the aim of estimating their frequency and diagnostic profile. Moreover, their detection is increasingly incidental on protein electrophoresis, due to the broadening of its clinical indications. We therefore considered it essential to undertake this study, whose objective is to describe the epidemiological features of monoclonal gammopathies in a hematology setting in Togo.

Methods

We conducted a retrospective chart review in the Department of Clinical Hematology at the University Teaching Hospital (CHU) Campus of Lomé, covering a 13-year period (June 2011–April 2024). Eligible patients were those referred for monoclonal gammopathy (MG) without a definitive diagnosis, or in whom an MG was identified during hematology follow-up. Inclusion required confirmation of a monoclonal component by serum protein electrophoresis (SPEP) and immunoglobulin typing, as well as complete medical records. Patients with non-monoclonal electrophoretic abnormalities, incomplete data, or unrelated hematologic disorders were excluded.

Data extracted from medical files included sociodemographic variables, circumstances of discovery, clinical and laboratory findings at diagnosis, and radiological investigations. Biological parameters comprised complete blood counts, bone marrow aspiration, renal function, serum calcium, inflammatory markers, and protein studies.

Data collection was performed using KoBoCollect (v2.024.12), and analyses were carried out with Microsoft Excel 2021 and Jamovi 1.6.3. Results are presented as proportions for categorical variables and as means with standard deviation or medians for continuous variables.

Operational definitions followed international criteria: multiple myeloma was defined by bone marrow infiltration >10% and at least one CRAB feature; Waldenström's macroglobulinemia by an IgM monoclonal component and lymphoplasmacytic proliferation; primary AL amyloidosis by biopsy-proven AL deposits; and MGUS by a monoclonal protein <30 g/L, <10% marrow plasma cells, and absence of CRAB features.

Results

A total of 39 patients were included in our study, corresponding to an average annual incidence of approximately three new cases.

The mean age at diagnosis was 59.97 years (range, 35–75 years). Among men and women, the mean ages were 59.74 years (range, 35–75 years) and 60.2 years (range, 40–74 years), respectively. Only four patients (10.3%) were younger than 45 years. There was a slight female predominance, with 20 women and 19 men (sex ratio, 0.95).

The most frequently consulted department before referral to hematology was rhumatology (23.08%). The monoclonal gammopathy was incidentally identified in 6 patients (11.26%) during serum protein electrophoresis performed for unrelated reasons, whereas it was revealed by clinical manifestations in 33 patients (84.62%). In 2 patients (4.12%), the gammopathy was discovered in the context of chronic lymphocytic leukemia follow-up.

Regarding diagnostic techniques, serum protein immuno-electrophoresis was performed in 29 patients (80.93%), followed by serum immunofixation (13.94%) and urinary immunofixation (5.13%).

Concerning heavy-chain isotypes, IgG was by far the most frequent (89.74%, 35/39), while IgM and IgA each accounted for 5.13%. For light chains, kappa was detected in 56.41% and lambda in 43.59% of cases.

Multiple myeloma was the most common underlying condition (82.05%), followed by monoclonal gammopathy of undetermined significance (MGUS, 12.82%) and Waldenström's macroglobulinemia (5.13%). Multiple myeloma was more frequent in men (Table 1), predominantly of the IgG kappa subtype (Table 2), and occurred mainly in the 55–64-year age group (Table 3).

Table 1: Distribution of patients by final diagnosis and sex.

Diagnosis	Sex		Sex-ratio	Total n (%)
	Female n (%)	Male n (%)		
MM	15 (46.88)	17 (53.13)	0.88	**32 (82.05)**
MGUS	4 (80.00)	1 (20.00)	4	**5 (12.82)**
WM	1 (50.00)	1 (50.00)	1	**2 (5.13)**
Total n (%)	**20 (51.28)**	**19 (48.72)**	**0.95**	**39 (100)**

MM: multiple myeloma; MGUS: monoclonal gammopathy of undetermined signification; WM: Waldenström's macroglobulinemia.

Table 2: Patient distribution by diagnosis and immunoglobulin chain type.

Diagnosis	Heavy- and light-chain types			Total n(%)
	IgG n (%)	IgM n (%)	IgA n (%)	
MM				
Kappa	16 (94.12)	0 (0.00)	1 (5.88)	**17 (43.59)**
Lambda	14 (93.33)	0 (0.00)	1(6.67)	**15 (38.46)**
MGUS				
Kappa	4 (100)	0 (0.00)	0 (0.00)	**4 (10.27)**
Lambda	1(100)	0 (0.00)	0 (0.00)	**1(2.56)**
WM				
Kappa	0 (0.00)	1 (100)	0 (0.00)	**1 (2.56)**
Lambda	0 (0.00)	1 (100)	0 (0.00)	**1 (2.56)**
Total	**35 (89.74)**	**2 (5,13)**	**2 (5,13)**	**39 (100)**

MM: multiple myeloma; MGUS: monoclonal gammopathy of undetermined signification; WM: Waldenström's macroglobulinemia.

Table 3: Patient distribution by diagnosis and age.

Diagnosis	Age group (years) n (%)				
	35-44	45-54	55-64	≥ 65	Total
MM	3 (9.38)	4 (12.50)	14 (43.75)	11 (34.38)	**32 (82.05)**
MGUS	0 (00.00)	0 (00.00)	2 (40.00)	3 (60.00)	**5 (12.82)**
WM	1(50.00)	0 (00.00)	0 (00.00)	1 (5.00)	**2 (5.13)**
Total	**4 (10.26)**	**4 (10.26)**	**16 (41.03)**	**15 (38.46)**	**39 (100)**

MM: multiple myeloma; MGUS: monoclonal gammopathy of undetermined signification; WM: Waldenström's macroglobulinemia.

Discussion

This work was a retrospective descriptive study of monoclonal gammopathies conducted in the Clinical Hematology Department of CHU-Campus over a 13-year period (June 2011 to April 2024). As the first study of its kind within this department, it provided valuable epidemiological and diagnostic data on this bioclinical syndrome. Nevertheless, it carries inherent limitations related to its retrospective design. Our results cannot be generalized to all patients with monoclonal gammopathies in Togo, due to the relatively small sample size and the fact that the CHU-Campus hematology department is not the sole referral center for such disorders. Additional limiting factors include patients' socioeconomic conditions, loss to follow-up after prescription of hematologic or cytogenetic investigations, underdiagnosis in asymptomatic individuals, reliance on traditional medicine, insufficient patient awareness, and limited diagnostic facilities.

We identified 39 cases of monoclonal gammopathies over 13 years, corresponding to an average of 3 cases per year. This incidence is comparable to that reported by Tia Weu et al. in Côte d'Ivoire in 2017 (3.5 cases per year) [11], but lower than that described by Maataoui et al. in Morocco in 2021 (10 cases per year) [12]. This discrepancy may be explained by the increasing recognition of monoclonal gammopathies in recent years across sub-Saharan Africa, as well as by improved accessibility to diagnostic resources.

The mean age of our patients was 59.97 years, consistent with the findings of Tia Weu et al. (59 years in Côte d'Ivoire) [11] and Maataoui et al. (61 years in Morocco) [12]. In contrast, our results are lower than those of Mseddi-Hdiji et al. (65 years in Tunisia) [13] and Decaux et al. (71 years in France) [14], confirming that monoclonal gammopathies are predominantly diseases of older adults. No cases were diagnosed in patients younger than 30 years, and only four patients were younger than 45 years, a finding consistent with published literature [15].

In our cohort, females represented 51.28% of cases, yielding a sex ratio of 0.95. This female predominance aligns with the findings of Belouni et al. in Algeria [16], and Decaux et al. in France [14], but contrasts with other studies reporting a male predominance [11,13].

Immunotyping represents the second step in the evaluation of monoclonal gammopathies, as it allows precise identification of the monoclonal immunoglobulin involved. Immunofixation remains the gold standard technique for this purpose. In our series, the distribution of immunoglobulins, in decreasing order of frequency, was as follows: IgG, IgM and IgA. The predominance of the IgG isotype has been consistently reported in the literature, with rates ranging from 42.8% to 60.91% [8,13,16]. Our findings are in line with those of Kyle et al. in USA and Decaux et al. in France [8,14], but contrast with Mseddi-Hdiji et al.in Tunisia and Ouzzif et al. in Morocco [13,17], who reported a predominance of IgG followed by IgA. These discrepancies may reflect the higher prevalence of Waldenström's macroglobulinemia in Western Europe and North America compared with the Mediterranean region and possibly genetic or environmental factors that remain to be clarified.

Regarding light-chain distribution, our results showed a slight predominance of kappa light chains (56.41%) compared with lambda light chains (43.59%). This pattern has also been documented in several other studies [12,16].

The distribution of patients according to the type of monoclonal gammopathy in our cohort revealed a marked predominance of multiple myeloma, compared with MGUS and Waldenström's macroglobulinemia. This finding is consistent with African studies, which similarly report multiple myeloma as the most frequent diagnosis among monoclonal gammopathies [11-13]. In contrast, Western series have shown MGUS to be the most common entity [8,14,18,19].

The predominance of multiple myeloma in our study may be explained by delayed diagnosis in our setting, as most patients with multiple myeloma were referred for specialized management. Conversely, the relatively low number of MGUS cases likely reflects the recruitment of symptomatic, hospitalized patients only, unlike in European and North American cohorts, where a substantial proportion of MGUS cases are identified incidentally during routine health evaluations.

Conclusion

In this first comprehensive series of monoclonal gammopathies reported from Togo, we found that most patients presented with symptomatic disease, most often multiple myeloma, whereas asymptomatic entities such as MGUS were rarely identified. The

predominance of IgG-kappa monoclonal proteins, the relatively younger age at diagnosis compared with Western cohorts, and the female-to-male distribution observed are broadly consistent with findings from other sub-Saharan African studies but highlight important regional differences in disease epidemiology. These results underscore both the diagnostic challenges and the potential for underrecognition of MGUS and related conditions in resource-limited settings, where access to systematic screening and advanced laboratory investigations remains restricted. Expanding diagnostic capacity, raising awareness among clinicians, and strengthening follow-up pathways are essential to improve early detection, refine risk stratification, and ultimately reduce the burden of monoclonal gammopathies in West Africa.

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