Clin. Lab. 2026;72:XXX-XXX

CASE REPORT

IgD Multiple Myeloma: a Rare and Aggressive Entity: Report of Three Clinical Cases and Review of the Literature

El Mostafa Chachi [1, 2], Mounya Bouabdellah [1, 3], Sakina Derbal [1], Fatiha El Oufir [1], Nadia Safir [1], Laila Benchekroun [1, 3]

[1] *Laboratory of Biochemistry, Ibn Sina Hospital in Rabat, Morocco*
[2] *Faculty of Medicine and Pharmacy, Ibno Zohr University, Agadir, Morocco*
[3] *Faculty of Medicine and Pharmacy, Mohammed V University in Rabat, Morocco*

SUMMARY

Background: **IgD multiple myeloma is an exceptionally rare subtype, accounting for less than 2% of all multiple myeloma cases.**
Methods: **We report three cases diagnosed at the central biochemistry laboratory of the Ibn Sina University Hospital in Rabat, Morocco, involving young patients with a mean age of 38 years.**
Results: **All cases showed a marked male predominance. Clinically, patients presented with frequent bone involvement and renal impairment. Laboratory findings consistently revealed anemia, Bence-Jones proteinuria with a predominance of lambda light chains, hypercalcemia, and variable bone marrow infiltration by plasma cells, reaching up to 88%. The diagnosis is often challenging due to the subtle or absent monoclonal bands on serum protein electrophoresis.**
Conclusions: **Compared to existing literature, our series aligns with the known features of IgD myeloma, including male predominance, lambda light chain involvement, anemia, renal dysfunction, and lytic bone lesions. However, it is distinguished by the unusually young age of the patients, highlighting the need for heightened clinical suspicion in younger individuals presenting with such symptoms.**
(Clin. Lab. 2026;72:xx-xx. DOI: 10.7754/Clin.Lab.2025.250567)

Correspondence:
El Mostafa Chachi
Faculty of Medicine and Pharmacy
Ibno Zohr University
Agadir
Morocco
Phone: +212 652079244
Email: chachimostafa@gmail.com

KEYWORDS

multiple myeloma, IgD lambda, serum protein electrophoresis, monoclonal immunoglobulin

INTRODUCTION

Multiple myeloma (MM) is a malignant hematologic disorder characterized by the clonal proliferation of plasma cells, leading to infiltration of the hematopoietic bone marrow and, in most cases, the production of a monoclonal immunoglobulin [1]. It accounts for approximately 1 - 2% of all cancers and 10 - 12% of hematologic malignancies.
Among its subtypes, IgD multiple myeloma is particularly rare, representing less than 2% of cases [1]. It is associated with an aggressive clinical course and generally poor prognosis [2]. This entity displays distinct

Case Report accepted May 30, 2025

clinical, biological, radiological, and prognostic features that set it apart from other forms of multiple myeloma [3].

CASE PRESENTATIONS

Clinical Case 1

We report the case of a 34-year-old male patient, with no significant past medical history and no history of smoking, who presented with bone pain and general health deterioration. Clinical examination revealed a conscious patient with stable hemodynamic and respiratory parameters. His performance status was evaluated at 3. Physical examination was otherwise unremarkable, except for bone pain localized to the thorax and pelvis.
Laboratory workup revealed normochromic, normocytic, non-regenerative anemia with a hemoglobin level of 6.9 g/dL. Renal impairment was noted, with blood urea at 0.69 g/L, serum creatinine at 30 mg/L, and an estimated glomerular filtration rate (eGFR) of 25 mL/minute/1.73 m² using the simplified MDRD formula. Urine analysis showed proteinuria at 2 g/L. Additional findings included hypercalcemia (120 mg/L), total protein level of 71 g/L, elevated C-reactive protein (CRP) at 120 mg/L, lactate dehydrogenase (LDH) at 443 IU/L, and β2-microglobulin at 12 mg/L.
A CT scan revealed mixed bone lesions, predominantly lytic, involving the sternum (manubrium), ribs, scapulae, humeral heads and shafts, pelvis, left acetabulum, and left femoral head, consistent with multiple myeloma.
Serum protein electrophoresis (HELENA Nexus V8®) identified a faint monoclonal spike migrating in the beta-2 globulin region, estimated at 6.53 g/L of total protein (Figure 1). Serum immunofixation confirmed the presence of a monoclonal immunoglobulin of the IgD lambda isotype. Urine immunofixation detected Bence Jones proteinuria, with monoclonal free lambda light chains. Quantitative immunoglobulin levels were: IgA 0.35 g/L, IgG 6.60 g/L, and IgM 0.30 g/L, with no significant abnormalities.
Bone marrow aspiration revealed 18% plasma cell infiltration, without notable morphological atypia. Based on these findings, the diagnosis of IgD lambda multiple myeloma was established.
The patient was treated with a combination of cyclophosphamide, thalidomide, and dexamethasone, along with bisphosphonates. He subsequently underwent autologous hematopoietic stem cell transplantation, resulting in marked clinical and biological improvement, including resolution of bone pain, disappearance of the monoclonal spike on electrophoresis, and absence of the IgD lambda band on serum immunofixation.

Clinical Case 2

We report the case of a 47-year-old male patient who presented with bone pain and general health deterioration. Clinical examination revealed a performance status of 1, with localized tenderness over the lumbar spine.
Laboratory investigations showed normochromic, normocytic, non-regenerative anemia with hemoglobin at 7 g/dL and thrombocytopenia at 72 x 10⁹/L. The patient had end-stage renal failure with blood urea at 2.92 g/L, serum creatinine at 119.7 mg/L, and an estimated glomerular filtration rate (eGFR) < 15 mL/minute/1.73 m², calculated using the simplified MDRD formula. Twenty-four-hour proteinuria was measured at 4.04 g. Other laboratory findings included hypercalcemia (101 mg/L), elevated LDH (345 IU/L), CRP (6.6 mg/L), β2-microglobulin (24 mg/L), ferritin (3,764 ng/mL), total serum protein (80 g/L), and normal serum albumin (40 g/L).
A low-dose CT scan revealed multiple lytic lesions along the cervical, thoracic, and lumbar spine, without evidence of spinal cord compression.
Serum protein electrophoresis (HELENA Nexus V8®) identified a monoclonal spike of 11.28 g/L migrating in the beta-1 globulin region. Serum immunofixation confirmed the presence of a monoclonal immunoglobulin of the IgD lambda isotype. Urine immunofixation was positive for monoclonal free lambda light chains, indicating Bence Jones proteinuria.
Sternal bone marrow aspiration revealed extensive marrow infiltration with 88% plasma cells.
The constellation of clinical, laboratory, and histological findings confirmed the diagnosis of IgD lambda multiple myeloma with extensive bone involvement and advanced renal impairment.

Clinical Case 3

We report the case of a 35-year-old male patient admitted for the management of upper limb bone pain and general health deterioration. The patient had no significant past medical history and no family history of hematologic malignancy. Clinical examination revealed a hemodynamically stable patient with a performance status of 0 and localized bone pain, without other abnormalities.
Laboratory tests showed normochromic normocytic anemia with a hemoglobin level of 8 g/dL, leukocytosis at 28.86 x 10⁹/L, predominantly lymphocytosis (12 x 10⁹/L) and monocytosis (7 x 10⁹/L), as well as thrombocytopenia at 81 x 10⁹/L. Renal function tests indicated moderate chronic kidney disease with urea at 0.92 g/L, serum creatinine at 22 mg/L, and an estimated glomerular filtration rate (eGFR) of 44 mL/minute/1.73 m² (calculated using the simplified MDRD formula).
A 24-hour urine collection showed proteinuria of 1.5 g/24 hour. Serum calcium was elevated at 125 mg/L, total protein at 66 g/L, lactate dehydrogenase (LDH) at 287 IU/L, and beta-2 microglobulin at 12 mg/L.
Serum immunoglobulin quantification was within normal ranges (IgG: 6.63 g/L, IgA: 0.58 g/L, IgM: 0.07 g/L). Low-dose CT imaging revealed osteolytic lesions of the upper limbs.
Capillary serum protein electrophoresis (HELENA Nexus V8®) demonstrated a faint monoclonal spike in the gamma-globulin region (Figure 2). Serum immunofixa-

Table 1. Epidemiological, clinical, and biological characteristics of patients with IgD multiple myeloma.

Characteristics	Case 1	Case 2	Case 3
Age (years)	34	47	35
Medical history	none	not specified	none
Bone pain	thorax, pelvis	lumbar spine	upper limbs
Anemia (Hb g/dL)	6.9	7.0	8.0
Thrombocytopenia (G/L)	No	72	81
Renal impairment	Yes (eGFR 25 mL/minute/1.73 m²)	Yes (eGFR < 15 mL/minute/1.73 m²)	Yes (eGFR 44 mL/minute/1.73 m²)
Hypercalcemia (mg/L)	120	101	125
Proteinuria	2 g/ 24 hour	4.04 g/24 hour	1.5 g/24 hour
LDH (UI/L)	443	345	287
CRP (mg/L)	120	6.6	not specified
Beta-2 microglobulin (mg/L)	12	24	12
Monoclonal immunoglobulin	IgD lambda	IgD lambda	IgD lambda
Monoclonal protein concentration	6.53 g/L	11.28 g/L	not quantified (discrete peak)
Monoclonal peak position	beta-2 globulin zone	beta-1 globulin zone	gamma globulin zone
Bence Jones proteinuria	free lambda chains	free lambda chains	free lambda chains
Bone marrow plasma cells (%)	18 %	88 %	50 %
Bone lesions	mixed, predominantly lytic	lytic, no spinal compression	lytic, upper limbs

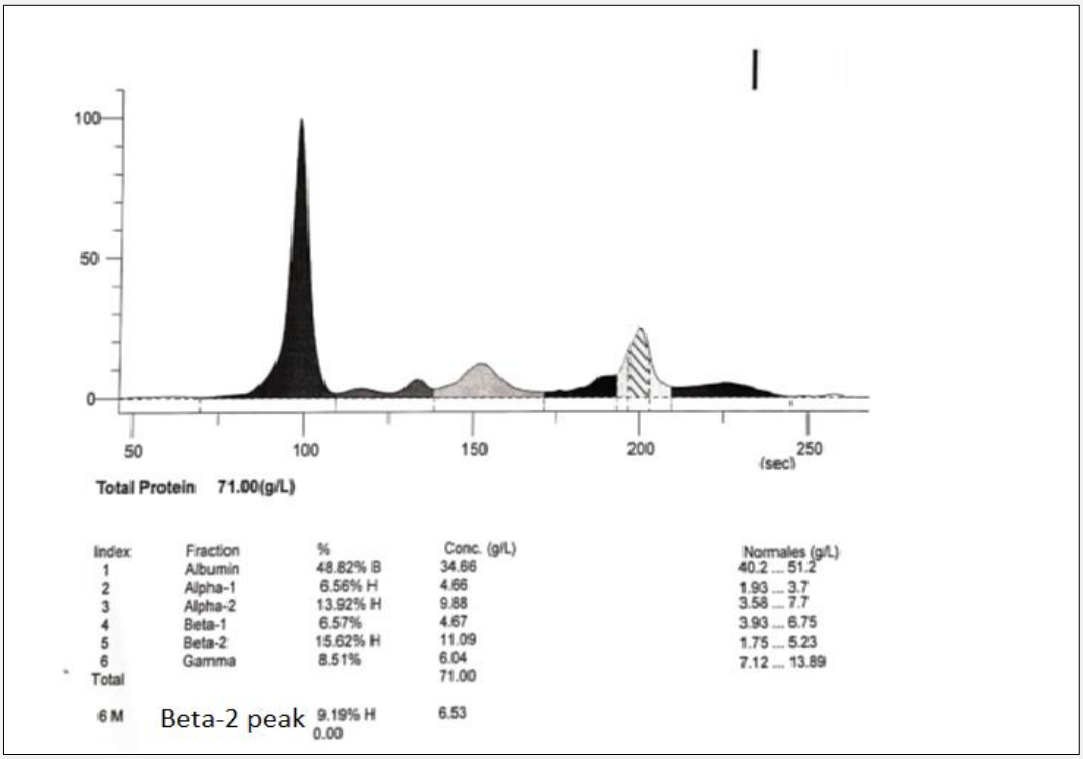

Figure 1. Electrophoretic profile suggestive of a pathological monoclonal spike in the beta-2 region, associated with relative hypogammaglobulinemia and a moderate inflammatory response.

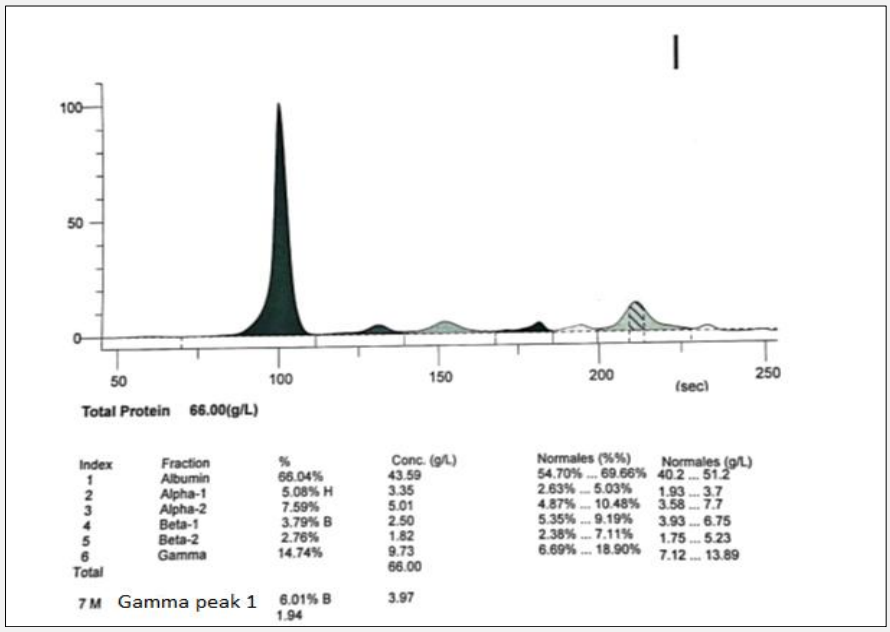

Figure 2. Electrophoretic profile suggestive of a discrete monoclonal spike in the gamma region, without hypoalbuminemia or marked hypogammaglobulinemia.

tion identified a monoclonal immunoglobulin of the IgD lambda isotype, along with free lambda light chains. Urinary immunofixation confirmed the presence of monoclonal free lambda light chains (Bence Jones proteinuria).

Bone marrow aspiration showed 50% infiltration by highly dystrophic plasma cells, including multinucleated forms and cells with a sheet-like cytoplasm.

These findings supported the diagnosis of IgD lambda multiple myeloma.

Table 1 provides a summary of the epidemiological, clinical, and biological characteristics of the three diagnosed cases of IgD multiple myeloma.

DISSCUSION

IgD multiple myeloma (MM) is a rare form of this hematologic malignancy, accounting for less than 2% of all MM cases [4]. It is characterized by severe clinical features and generally poor prognosis [5]. This subtype predominantly affects younger patients (mean age: 56, range: 19 - 86), with a male predominance (65% are aged < 60 at diagnosis) [6]. Our cases reflect this trend, with a mean age of 38 years and all patients being male.

Bone pain is the primary presenting symptom of IgD MM, reported in over 72% of patients [7,8], and is usually due to osteolytic lesions [8]; in our series, all patients presented with bone pain, and imaging revealed osteolytic lesions in 100% of cases.

Renal failure is common at diagnosis (affecting > 30% of patients), with > 50% progressing to dialysis-dependent end-stage disease [8]. It is often linked to the nephrotoxicity of light chains, particularly of the lambda type. In our series, all patients had varying degrees of renal impairment.

Normochromic, normocytic, regenerative anemia is a consistent finding in MM, reflecting bone marrow infiltration. This feature was present in all three patients in our series. Several studies also highlight the high frequency of anemia in IgD MM [7], often due to marked marrow infiltration [6].

Leukopenia and thrombocytopenia are rare (around 10% of cases) but are considered poor prognostic factors, as they reflect a high tumor burden [9]. Significant thrombocytopenia was noted in the third patient in our series.

Unlike IgG or IgA MM, hyperproteinemia is uncommon in IgD MM. In our series, all patients had normal total protein levels, which does not rule out the diagnosis of myeloma [10].

Serum protein electrophoresis remains an important screening tool, although it was often minimally informative in IgD MM, with a faint monoclonal spike in the alpha or beta regions seen in only 13 - 20% of cases [10]. In our series, faint but characteristic monoclonal spikes were located in the gamma, beta-1, or beta-2 regions.

Serum immunofixation identified a monoclonal immunoglobulin of the IgD isotype associated with lambda

light chains in all three cases. Indeed, in 60% of IgD MM cases, the light chains are of the lambda type, in contrast to other MM subtypes where kappa chains predominate [10]. Double immunofixation using anti-delta and anti-lambda specific antisera confirmed the diagnosis in all three cases.

Quantification of immunoglobulin levels helps assess the suppression of normal polyclonal immunoglobulin synthesis. In our series, no hypogammaglobulinemia was noted in two patients; in the third patient, the test was not performed.

The concentration of monoclonal protein in IgD MM is generally low (median: 9.42 g/L), much lower than in IgG MM (35 g/L) or IgA MM (32 g/L) [2], due to the physiologically low level of IgD (30 mg/L in adults). The levels measured in our series were low to moderate, consistent with the literature.

Bence Jones proteinuria, with monoclonal free light chains, is frequent in IgD MM (90% of cases), compared to only 35% in IgG MM and 20% in IgA MM [11]. All patients in our series had Bence Jones proteinuria with lambda free light chains.

Bone marrow aspiration confirmed the diagnosis, showing plasma cell infiltration ranging from 18% to 88%, including some highly dystrophic plasma cells.

Hypercalcemia, reported in 22% of cases at diagnosis [8], was present in all patients in our series, supporting the severity of the clinical presentation.

Serum beta-2 microglobulin is a marker of tumor burden and a prognostic factor per the ISS score, provided renal function is normal [12]. In our series, levels were very high in all patients, reflecting both renal involvement and tumor load.

C-reactive protein (CRP), induced by interleukin-6 (IL-6), is an early marker of tumor inflammation [13]. It was elevated only in the first patient.

Finally, elevated LDH levels, frequently seen in IgD MM and associated with high tumor burden [13], were observed in all three patients.

Regarding management, patients were treated with a regimen combining cyclophosphamide, thalidomide, dexamethasone, and bisphosphonates. The first patient also underwent autologous hematopoietic stem cell transplantation, resulting in significant clinical and biological improvement.

CONCLUSION

IgD MM remains a very rare entity, predominantly affecting relatively young male patients. It is typically characterized by severe clinical, biological, and radiological manifestations at diagnosis. The discrete nature of the monoclonal spike often complicates the differential diagnosis, particularly with non-secretory myeloma and light-chain myeloma. Despite its generally poor prognosis, overall survival has significantly improved with the advent of novel therapeutic agents and the use of autologous stem cell transplantation.

Acknowledgment:
We would like to express our full gratitude to the whole team. Thank you for the important contribution and availability.

Declaration of Interest:
The authors do not declare any conflict of interest.

References:

1. Djidjik R, Lounici Y, Chergeulaïne K, et al. IgD multiple myeloma: Clinical, biological features and prognostic value of the serum free light chain assay. Pathol Biol (Paris) 2015 Sep;63(4-5):210-4. (PMID: 26294067)

2. Chong YP, Kim S, Ko OB, et al. Poor outcomes for IgD multiple myeloma patients following high-dose melphalan and autologous stem cell transplantation: a single center experience. J Korean Med Sci 2008 Oct;23(5):819-24. (PMID: 18955788)

3. Duvic C, Sarret D, De Revel T, et al. [IgD myeloma manifesting as acute renal insufficiency]. Rev Med Interne 2000 Sep;21(9): 799-803. (PMID: 11039177)

4. Arpin C, De Bouteiller O, Razanajaona D, et al. The normal counterpart of IgD myeloma cells in germinal center displays extensively mutated IgVH gene, Cmu-Cdelta switch, and lambda light chain expression. J Exp Med 1998 Apr 20;187(8):1169-78. (PMID: 9547329)

5. Chebbi W, Berriche O. [IgD kappa myeloma revealed by bilateral lumbosciatica]. Pan Afr Med J 2014 Aug 21:18:314. (PMID: 25469207)

6. Benchekroun L, Ouzzif Z, Bouabdillah M, et al. [Multiple myeloma with D immunoglobulin]. Ann Biol Clin (Paris) 2011 Sep-Oct;69(5):581-7. (PMID: 22008139)

7. Blade J, Lust JA, Kyle RA. Immunoglobulin D multiple myeloma: presenting features, response to therapy, and survival in a series of 53 cases. J Clin Oncol 1994 Nov;12(11):2398-404. (PMID: 7964956)

8. Ancelewicz Z, Takatsuki K, Sugai S, Pruzanski W. IgD multiple myeloma. Review of 133 cases. Arch Intern Med 1975 Jan;135 (1):87-93. (PMID: 1111472)

9. Blade J, Rosinol L. Renal, hematologic and infectious complications in multiple myeloma. Best Pract Res Clini Haematol 2005; 18(4):635-52. (PMID: 16026742)

10. Poncet JC, Toussirot E, Wendling D. Specific features of immunoglobulin D multiple myeloma. Rev Rhum Engl Ed 1997 Jun ; 64(6):410-3. (PMID: 9513614)

11. Wang GR, Sun WJ, Chen WM, et al. Immunoglobulin D Multiple Myeloma: Disease Profile, Therapeutic Response, and Survival. Acta Haematol 2016;136(3):140-6. (PMID: 27409804)

12. Greipp PR, San-Miguel J, Durie BG, et al. International Staging system for multiple myeloma. J Clin Oncol 2005 May 20;23(15): 3412-20. (PMID: 15809451)

13. Nair B, Waheed S, Szymonifka J, John D-Shaughnessy Jr, Crowley J, Barlogie B. Immunoglobulin isotypes in multiple myeloma: laboratory correlates and prognostic implications in total therapy protocols. Br J Haematol 2009 Apr;145(1):134-7. (PMID: 19120351)