

SERUM FREE LIGHT CHAINS MEASUREMENT FOR AL AMYLOIDOSIS DETECTION IN PATIENTS WITH SUSPECTED AMYLOID CARDIOMYOPATHY

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Aim: To assess serum free light chains (SFLCs) behavior in heart failure patients with preserved systolic function and ventricular wall thickness suggestive of cardiac amyloidosis (CA) and their performance as an initial test for detecting light chain (AL) amyloidosis. **Methodology:** Ambispective, observational study in a high complexity hospital in Buenos Aires from March 2020 to October 2022. Inclusion criteria were hospitalization in Cardiac ICU due to heart failure and echocardiographic evidence of left-ventricular ejection fraction >55% and ventricular wall thickness $\geq 1,2$ mm in any segment. Inclusion was prospective for 6 months and retrospective for 2 years. Heart failure cases due to any other cardiovascular affections were excluded. The minimum follow up was 3 months. Sampling was consecutive. SFLCs values and the kappa/lambda ratio were registered (normal range was assumed between 0,26 and 1,65). Requests of urine and serum immunofixation and other complementary studies were registered as well as their results. Diagnosis based on medical criteria served as the reference standard for AL and transthyretin amyloidosis (ATTR) diagnosis. For the evaluation of diagnostic performance, sensitivity, specificity, likelihood ratios and predictive values and their respective confidence intervals were calculated with software Stata13. **Results:** 29 patients were included, with a median age of 81 years old (IQI 75-85). Amyloidosis was diagnosed in 12 patients (41%, IC95 24-61%), from which 7 (58%) were ATTR and 5 (42%) AL. Eighty-six percent (n = 6) of the patients with ATTR diagnosis and 100% of those with AL amyloidosis presented alterations of at least one free light chain value (lambda or kappa). Kappa/lambda ratio was altered in 100% patients with AL amyloidosis and in 43% of ATTR patients. Sensitivity of kappa/lambda ratio for the diagnosis of AL amyloidosis was 100% (IC95 48%-100%) and specificity was 58% (37-78%). Positive likelihood ratio (PLR) was 2.4 (1,49-3,85) and negative predictive value was 100% (76%-100%). **Discussion:** Altered kappa/lambda ratio for diagnosis of AL cardiac amyloidosis showed high sensitivity but a PLR of 2.4 and low specificity, suggesting its convenience as a screening method for AL amyloidosis. Subsequent immunofixation studies would be required for diagnostic confirmation. Negative predictive value of 100% suggests it might be a reliable method to rule out AL amyloidosis. The main limitations of the research are the small number of patients involved, its ambispective

character, the fact that a unique range of the kappa/lambda ratio was used disregarding renal function, and the possible distortion of kappa/lambda ratio in clinical situations associated with polyclonal hypergammaglobulinemia. Also, the definition of a suspected case of CA does not cover all possible suspicion scenarios and is based on operator-dependent findings. **Conclusions:** Currently, diagnostic methods allow early diagnosis of CA. Differentiating between its two main etiologies, ATTR and AL, is a key point. SFLCs dosing turned out to be highly sensitive for diagnosis of AL amyloidosis, though not very specific. Considering it is a simple and rapid method, it could be useful for the initial evaluation of CA, as it allows to increase the grade of suspicion of AL, an entity with earlier mortality that requires prompt therapeutic action.

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IGA MULTIPLE MYELOMA ASSESMENT WITH HEVYLITE ASSAY

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Introduction: A key element on Multiple Myeloma (MM) evaluation is the quantification of monoclonal proteins. Current techniques include Serum Protein Electrophoresis (SPE), Immunofixation (IFE) and Free Light Chain Assay (FLC, Free-lite). All assays are clinically relevant but have some limitations. Especially for IgA MM patients, SPE could be inaccurate, insensitive due to comigration, lack of sensitivity below 10 g/L and has subjective interpretation, among other limitations. IFE have greater sensitivity but is only qualitative. Hevylite, an immunoassay based on polyclonal antibodies that measure IgA- κ and IgA- λ independently, quantifies these proteins while identifying clonality through its ratio (IgA- κ /IgA- λ , HLCr) and gives additional clinical information, especially for difficult IgA MM patients serum samples. **Aim:** To test Hevylite assay and to evaluate its lab and clinical relevance for IgA MM patients. **Material and methods:** 44 IgA MM patients were evaluated in this study. All were received at protein lab for MM query between Feb-May 2023. Patients were selected according to: CZE: Monoclonal component or distortion of alfa-2 or beta fraction. IFE: Monoclonal component IgA-Kappa or IgA-Lambda isotype. Measurement of IgA- κ and IgA- λ were performed using Hevylite™ assay (The Binding Site) according to manufacture recommendations in a turbidimetry (Optilite, The Binding Site). CZE with Capillarys 3 (Sebia) and IFE with Hydrasys 2 (Sebia). Patients were classified: IgA- κ MM, IgA- λ MM and non-MM. Patient's evaluation was performed following IMWG recommendations. **Results:** Serum level of monoclonal protein and discrimination between monoclonal and polyclonal components are crucial in the follow up of MM patients. All IgA MM patients in the study showed an abnormal HLCr IgA κ /IgA λ indicating clonality. IgA κ or IgA λ levels were abnormally high when the isotype was monoclonal. HLCr allowed a better discrimination between groups and an accurate identification of myeloma patients at diagnosis.