

## CHANGES IN SOME BIOCHEMICAL PARAMETERS IN PATIENTS WITH KAHLER RUSTITZKI DISEASE

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**Keywords :** Kahler Rustitzki disease, uraemia, bilirubinaemia, renal insufficiency, creatinine.

**Abstract:** This paper aims to carry out research into the changes in some biochemical parameters in 10 patients diagnosed with plasmacytoma. The parameters have been obtained in the laboratory of “Elena Beldiman” Emergency Hospital Barlad, and in the “Dr Stoian –Dr. Ungureanu” Private Medical Practice, between 2005 – 2011. The analyses results, which are in accordance with those from the scholarly literature, show that the changes in blood indicators may occur as a result of the influence of various factors which negatively modify the patient’s health. The 10 cases surveyed during 2010 also emphasize the frequency of this disease in the sense that they have the tendency of equalization under the aspect of the two genders ( masculin and feminin) in comparison with the years before 2010.

### INTRODUCTION

The experimental research from the last years have showed the possible existentence of a connection between the inflammatory and immunological processes and the emergence of plasmocytomas, at first reactive and then having a neoplastic feature. Once the sternal puncture was introduced in the clinic, the disease was better studied and diagnosed, and in the last years due to the use of the electrophoretic study of the serum proteins, the protein genesis disorders found in this disease were properly described. As a result of the changes in the dispersion of proteins, the synthesis of the enzymes was heavy to be made because of their main component which consits of protein fractions with a special physical and chemical structure. Most of the patients are aged between 50 and 60, acknowledging the fact that in the disease development there is an asymptomatic period which varies from 10 to 15 years. Acute renal insufficiency may be a consequence of dehydration, hypercalcemia, and hyperuricemia which represent the biological parameters characteristic of multiple myeloma development. What is outstanding in what that concerns the biochemical parameters is the fact that a precocious paraclinic marker is the increase of the serum value of the uric acid, which will lately determine the presence of a higher percent of immature myeloma cells in the bone marrow ( MUT POPESCU, D., 2003).

### MATERIALS AND METHODS

The research were carried on a casuistry which consisted of a number of 10 patients of different ages diagnosed with plasmacytoma between 2005 and 2011. The venous blood was sampled in vacutainers for biochemistry, and then spun out in the „EPPENDORF”5804 centrifuge. The samples were operated with the help of “RX IMOLA” TM RANDOX , the wet biochemistry auto-analyzer ( with liquid reagents). During the comparative study of the researched cases, the values of the following biochemical markers were correlated with the age and the gender of the patients: the amount of urea (mg/dl), the amount of creatinine (mg/dl), the amount of total bilirubin (mg/dl). The amount of urea (mg/dl), the amount of creatinine (mg/dl), the amount of total bilirubin (mg/dl) were defined with “RX IMOLA” TM RANDOX, biochemsitry auto-analyzer. Rx Imola is a clinical chemistry analyzer fully automated with an analyzer software. The software functions of the analyzer include the facility of interaction with the host computer in order to directly download the selection details of the assay method for individual samples. A barcode system is used for a rapid identification of the patient samples, reagents and QC samples. The Incubation Reaction Unit platform cuvette holds 90 cuvettes. It spins and brings the designated samples in the place where the samples/ reagents are divided to Reagent Pipette Unit. The Detector Unit measures the solutions absorbance durinf the reaction process ( mixing and incubation) in cuvettes. The light form the halogen lamp is dispersed using an active measurement of diffraction of 12 various wavelengths. The Sample Pipette Unit aspires the sample from Auto Sampler Unit using Sampling Pump Unit and operates it in a cuvette ( in Incubation Reaction Unit) and / or in Ion Selectable Electrode Unit. The Reagent Pipette Unit aspires a reagent from a reagent bottle ( in Reagent Container Unit) using Reagent Pump Unit, and then it dispense it in a cuvette ( in Incubation Reaction Unit). After a sample and reagent are dispensed in a cuvette, Mixing Stirrer Unit brings the stirrer paddle and mixes the mixture in the cuvette. The Auto Sampler Unit has 72 sample tubes ( normal and emergency samples) and 20 sample cups ( standard samples and Ion Selectable Electrode Unit washing solution) and brings the designed samples in Sample Pipette Unit pipetting position through turntable rotating. The Reagent Container Unit holds a maximum 60 reagent bottles on the reagent tray and brings the designed reagent in the Reagent Pipette Unit pipetting position. The measurements are made on each 9 seconds during a period of 10 minutes. This results in a maximum rate of 400 photometric tests per hour. RX Imola analyzer has a cycle of 9 seconds. During each cycle, the

system either adds samples, reagents, mixes or take measurements. The measurements can be taken at one or two wavelengths, depending on the chemistry parameters specific to the test.

## RESULTS AND DISCUSSION

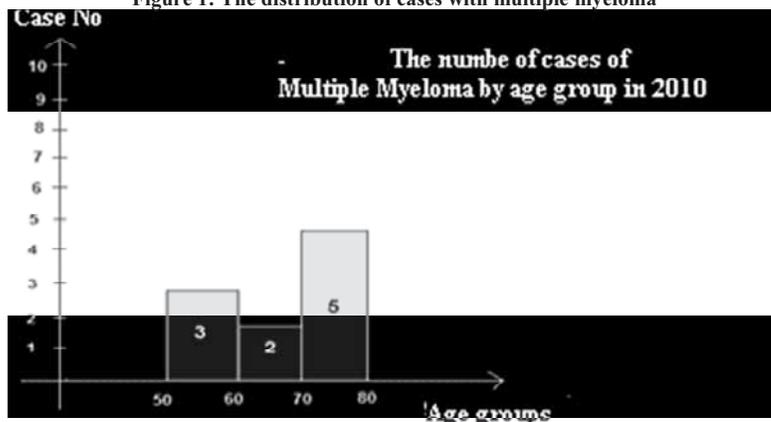
In the present paper we have analyzed a casuistry which consisted of patients belonging to both genders, aged between 54 and 79 years throughout 2010, whose diagnosis was plasmacytoma, as primary and secondary diagnosis, with a more or less favorable development. As a consequence, the irregularity degree of the studied biochemical parameters varied more or less from one patient to another.

**Table 1: Gender distribution of the studied casuistry**

Case no.	Name Initials	Gender	Age
1	C.D.	M	71
2	P.G.	M	54
3	S.M.	F	54
4	Ş.R.	M	70
5	B.E.	F	62
6	C.M.	M	74
7	C.V.	M	59
8	M.A.	F	74
9	P.I.	F	75
10	Z.I.	F	79

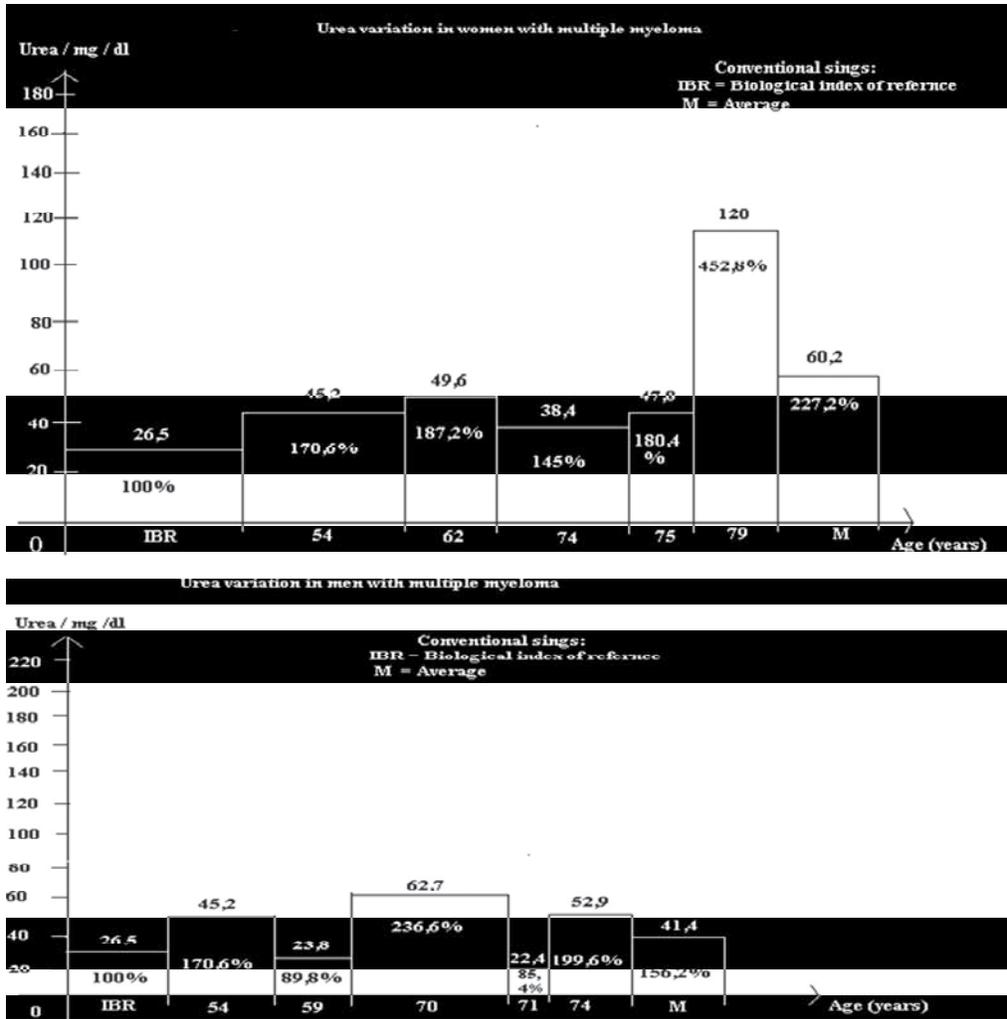
Conventional signs: F – female cases with Multiple Myeloma  
 B – male cases with Multiple Myeloma

**Figure 1: The distribution of cases with multiple myeloma**



**Urea** – being an organic compound ( sanguineous non-proteinaceous nitrate class) as well as creatine – creatine, bilirubin, it results in a final product of amino acids degradation (MIHELE, D., 2007). It is exclusively synthesized in liver and is eliminated via kidney. The achievement of a balance between the liver’s function ( where it is synthesized) and the kidney’s function ( through where it’s eliminated) determines the maintaining of the urea concentration within the normal physiologic limits.

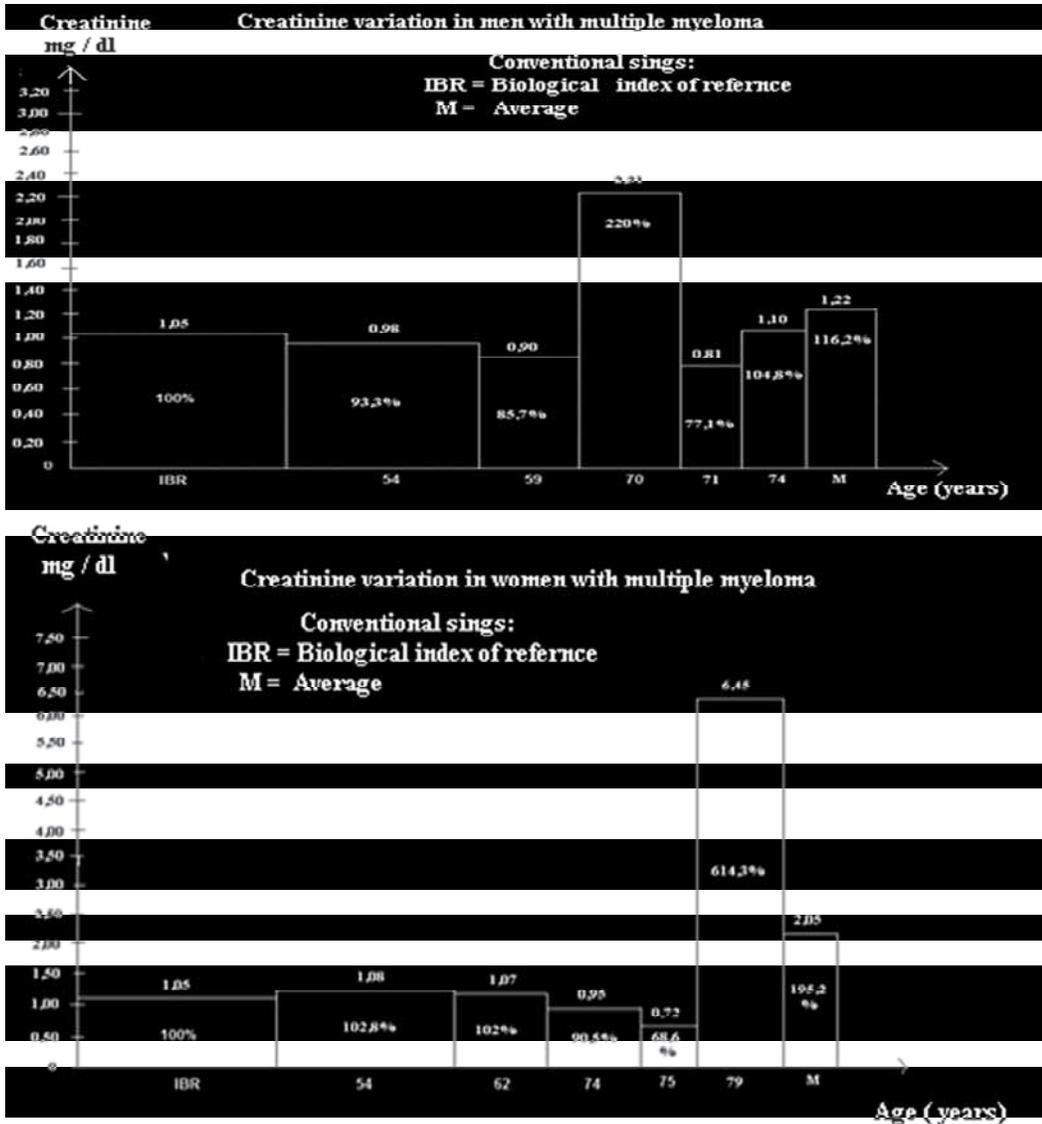
**Figures 2 and 3: Changes in the urea values in patients of both genders suffering from multiple myeloma**



The normal physiologic values of the urea perceived by “RX IMOLA”™ RANDOX, the wet biochemistry analyzer (with liquid reagents), for both females and males situate between 10-43 mg/dl with an average of 26,5 / mg/dl.

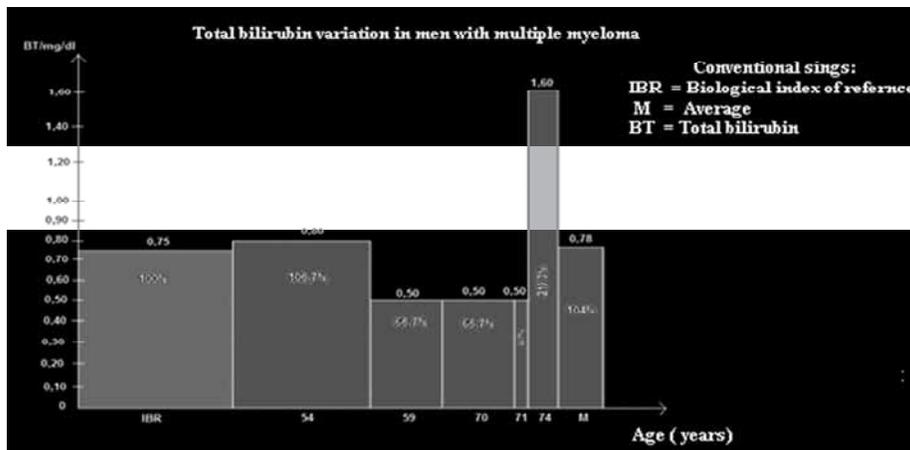
**Creatine and serum creatinine** – creatine (the methyl guanidine-acetic acid) is obtained in tissues after the biosynthesis between arginine and glycooll takes place. Its outcome is represented by glycoyamine which changes into creatinine through methylation. Creatinine represents the creatine’s anhydride, being a secretion product of creatine. Although most of the patients with Multiple Myeloma have as finality the renal insufficiency (IRA) or chronic (IRC), the creatinine can’t be considered a sensitive marker in the case of light to moderate renal impairments.

Figure 4 and 5: Changes in creatinine values in the multiple myeloma for both genders



The normal physiologic values of the creatinine perceived by “RX IMOLA” TM RANDOX, the wet biochemistry analyzer ( with liquid reagents) for both genders situate between 0,60 – 1,50/mg/dl with an average of 1,05 / mg/dl. **Total bilirubin** – it results after the hemoglobin catabolization, circulating in the blood plasma, bound to the serum albumins. The blood contains both free bilirubin ( indirect, unconjugated) and bound bilirubin ( direct, conjugated). An important role of these direct and indirect bilirubin reactions allow us to make a difference between various types of jaundices ( mechanical, haemolytic, hepatocellular). In this way, in the mechanical jaundice the value of the direct bilirubin grows, in the haemolytic one the value of the indirect bilirubin grows, and in the hepatocellular jaundice the values of both conjugated and unconjugated bilirubin grow.

Figure 6 and 7: Changes in total bilirubin values in multiple myeloma for both genders



The normal physiologic values of the total bilirubin perceived by “RX IMOLA” TM RANDOX, the wet biochemistry analyzer ( with liquid reagents) for both genders are situated between 0,20 – 1,30 /mg/dl with an average of 0,75 / mg/dl.

### CONCLUSION

The research emphasized the frequent incidence of the multiple myeloma at individuals aged between 50 and 80 years. The urea values on men exceed the normal physiologic limits of the biological benchmark, and two of five cases show values of this mark under the normal physiologic limit.

In what that concerns the feminin gender, all the cases revealed urea values higher than the normal physiologic limit of the biological benchmark.

By relating the cases to the average of the values acquired by these, it could be noticed that the urea values were higher in just one case.

The presence of a creatinine value higher than the normal physiologic value could be noticed at both men and women in just one case , as well as when it was related to the average.

Changes in the total bilirubin values that were above the normal physiologic range for both men and women took place in just one patient’s case.

The mean of the total bilirubin value that was referred to values acquired by female patients shows an ascending tendency for more than a half of cases, in comparison with men where this tendency existed in less than a half of the cases.

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