

Liver Enzymes as Biomarkers for Hepatotoxicity of Statins in Patients with Dyslipidemia

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1. Liver Enzymes as Biomarkers for Hepatotoxicity of Statins

The biomonitoring of the hepatotoxic effects are conducted by evaluating the biochemical markers, mainly liver enzymes (serum transferases) as important indicators or parameters for evaluating the hepatotoxic effect of certain chemical agents, in our study, statins.

Recruitment and diagnostic tests were conducted in the University Clinic of Clinical Chemistry, Clinical Center "Mother Teresa" in Skopje. The study was performed in the years 2017-2018

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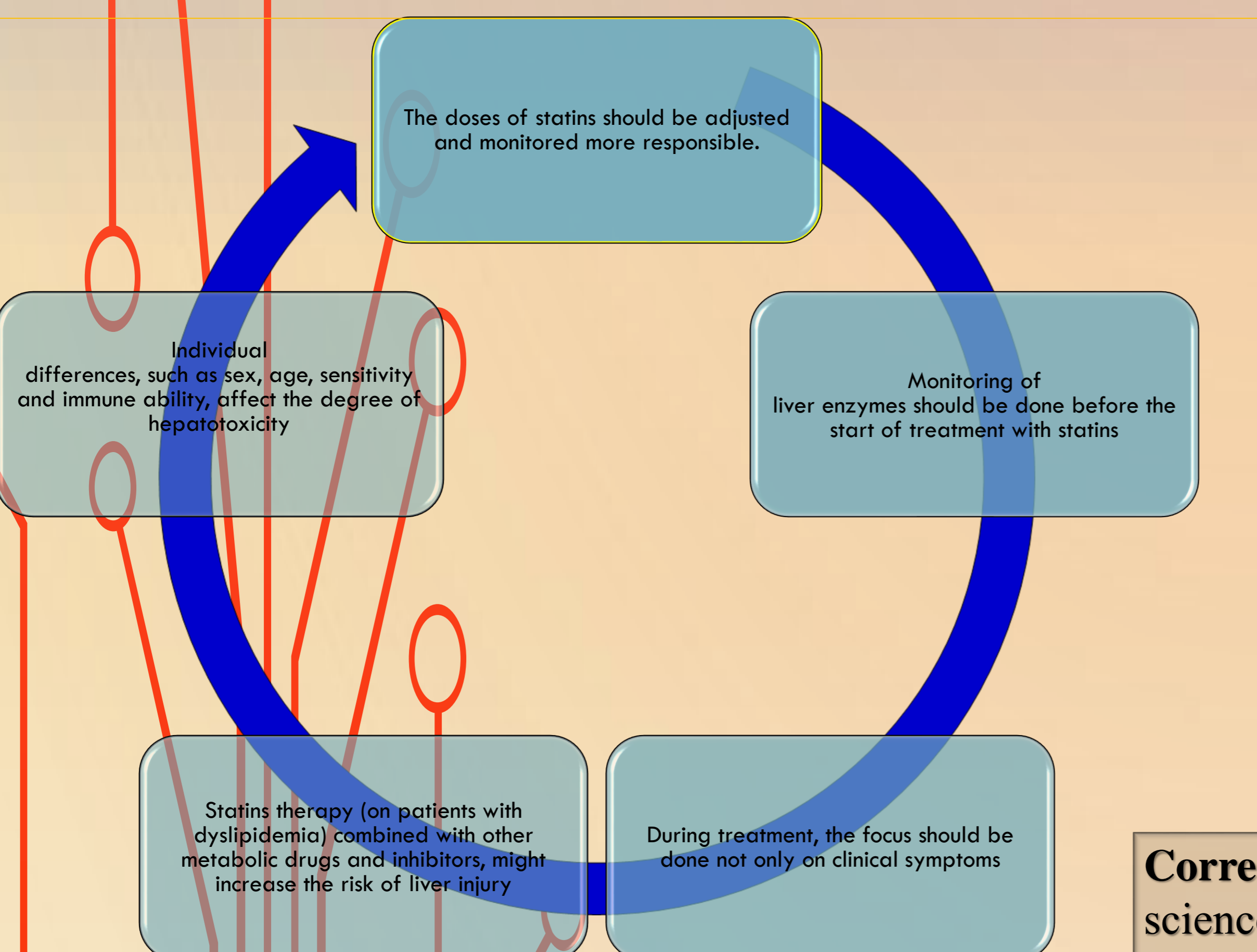
Dyslipidemia in the subjects is define with observation of complete lipid status including total cholesterol (TC) (the mean=5.68mmol/L), low-density lipoprotein cholesterol (LDL-C) (the mean=2.49 mmol/L), triglycerides (TG)(the mean= 3.22mmol/L) and highdensity lipoprotein cholesterol (HDL-C) (the mean=1.24mmol/L). All of the subjects used the herapy with statins (atorvastatin and rosuvastatin) for minimum of 6 months with daily dose of statins 5-40 mg.

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The observation of total serum transferases confirmed that 20 of the subjects (71,42%) have a normal serum trasferases (AST and ALT) but 8 of the subjects (28,58%) have a abnormal level of serum trasferases

Table 1. The total number and percentage of subject with normal and abnormal level of serum transferases

Liver enzymes	Group -1 (Atorvastatin)		Group -2 (Rosuvastatin)		Total	
	N	%	N	N	N	%
Normal	10	66.7	10	76,92%	20	71,42%
Abnormal	5	33.3	3	23,18%	8	28,58%
Total	15	100	13	100	28	100



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Table 2. Number of subjects with atorvastatin and rosuvastatin therapy with normal level of AST and ALT

No. of subjects with atorvastatin therapy (normal level of serum transferases)	AST	ALT	No. of subjects with rosuvastatin therapy (normal level of serum transferases)	AST	ALT
1.	22	15	1.	17	20
2.	16	16	2.	31	49
3.	21	18	3.	16	17
4.	21	22	4.	28	24
5.	17	12	5.	21	14
6.	16	22	6.	23	15
7.	28	40	7.	28	24
8.	19	14	8.	21	20
9.	27	31	9.	22	13
10.	18	33	10.	22	16
Mean ± S.D.	20.5± 4.2	22.3± 9.4	Mean ± S.D.	22.9± 4.8	21.2± 10.5

Table 3. Number of subjects with atorvastatin and rosuvastatin therapy with abnormal level of AST and ALT

(GROUPE 1) No. of subjects with atorvastatin therapy (abnormal level of serum transferases)	AST (10-34) U/L	ALT (10-45) U/L	(GROUPE 2) No. of subjects with rosuvastatin therapy (>10 time of level of serum transferases)	AST U/L 10-34	ALT U/L 10-45
1	47	87	1	700	4319
2	38	69	2	154	93
3	49	112	3	887	995
4	44	50			
5	40	50			
mean±S.D.	43.6 ±4.6	73.6±26.4	mean±S.D.	580.3±380.9	1802.3±2225.7

5. Conclusion

With results of our study we want to emphasize the importance of biomonitoring of liver enzymes as biomarkers which associated hepatotoxicity

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