

The differences in complete blood count, biochemical and coagulation test results between high and low hepatitis C viremia subjects

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INTRODUCTION

Hepatitis C viral infection (HCV) is a serious global public health problem that affects approximately 1% of the world's population. The World Health Organization (WHO) has outlined a set of targets to eliminate hepatitis C by 2030. In 2022, Lithuanian authorities initiated an HCV screening program to eliminate HCV, thus detecting possible HCV-related deaths, cases of hepatocellular carcinoma, and decompensated cirrhosis.

AIM OF THE STUDY

To evaluate CBC, biochemical, and coagulation tests in high and low HCV viremia.

MATERIALS & METHODS

The 216 random subjects who participated in a screening program for HCV infection were included in the study - 151 subjects (95M/56F) with high viremia (>800000 cop/mL) as hiVG, and 65 subjects (27M/38F) with low viremia (<800000 cop/mL) as loVG. All subjects were anti-HCV positive. Viremia was evaluated using qRT-PCR, and the genotype was assessed using VERSANT HCV Genotype 2.0 Assay Kit, CBC - BC UNICel DxH 800 analyzer, biochemical tests - BC AU680 Clinical Chemistry Analyzer, and coagulation tests - Stago STA R Max analyzer.

RESULTS

The results showed that high viremia average age is 56,5 and low viremia – 56,2 years. It also showed that there were some significant differences between hiVG and loVG in biochemical, CBC, and coagulation results:

- CBC - RBC, HGB, HCT, WBC, PLT, and PCT results had significant differences between groups, $p < 0.05$;
- Biochemical tests like ALP, DBIL, TBIL, and ALB significantly differed between hiGV and loVG, $p < 0.05$;
- Coagulation tests – PT (SPA Owren's method), by sec., %, and INR are also significantly different, $p < 0.05$.

Then, the hiVG and loVG were separated by gender into four groups. Results showed that the differences in males hiVG and loVG groups were the same as in the general subjects' pool; however, in females, differences were found only in RBC, HGB, and ALB, $p < 0.05$.

When comparing results to the normal range, we found that:

- males hiVG had lower PLT, RBC, and PCT results but higher ALT, GGT, and AST;
- males loVG had lower PT (SPA(%)), PCT, PLT results, but higher PT (SPA(sec.)), ALT, AST;
- females hiVG had lower PLT, PCT, and SPA INR results but higher AST, ALT, and GGT;
- females loVG had lower PLT, PCT, and ALB results but higher PT (SPA (sec.)), PT (SPA(%)), and GGT.

CONCLUSIONS

Active infection with the hepatitis C virus, depending on the gender and viremia level, changes the results of CBC, biochemical, and coagulation tests. Therefore, we recommend a complete workup of patients when HCV viremia is detected.

REFERENCES

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High viremia test results in males and females

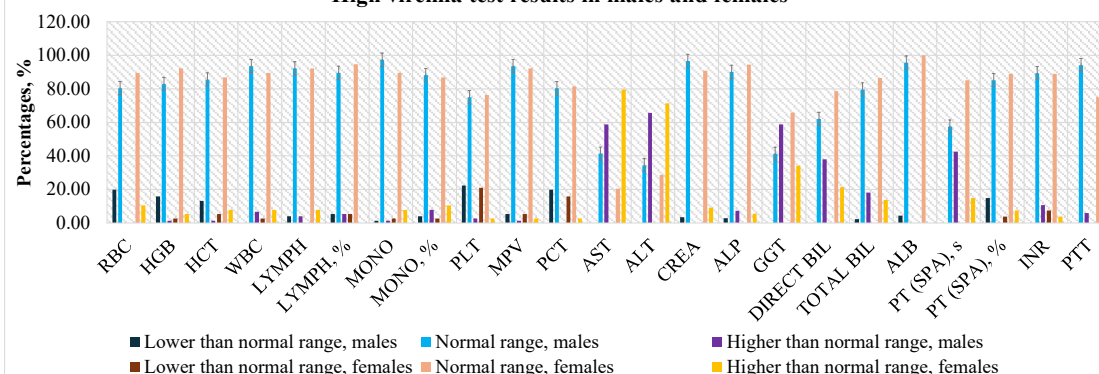


Fig 2. High viremia CBC, biochemical and coagulation test results in males and females comparing to normal range, n = 151

Genotypes in low and high viremias

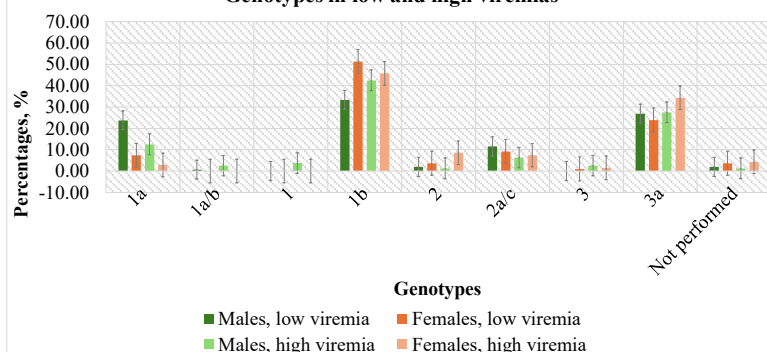


Fig 1. Genotype variation between low and high viremia in males and females, n = 216

Low viremia test results in males and females

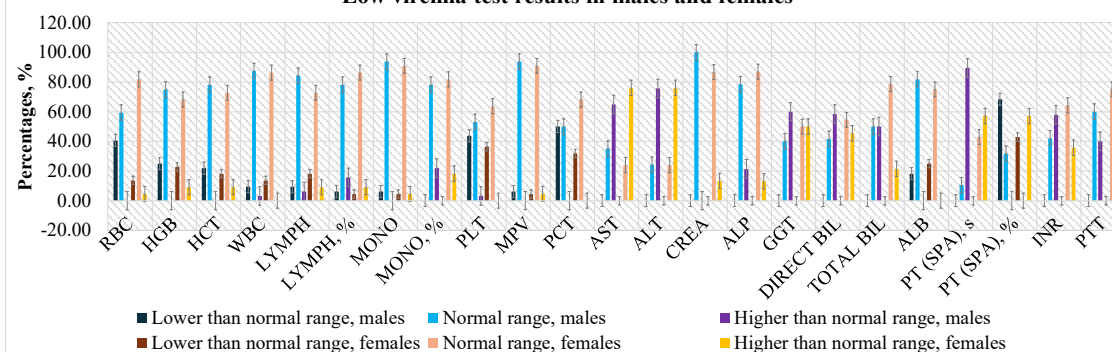


Fig 3. Low viremia CBC, biochemical and coagulation test results in males and females comparing to normal range, n = 65