OUTCOMES OF VITAMIN E THERAPY IN A VETERAN POPULATION WITH NON-ALCOHOLIC STEATOHEPATITIS AMONG GROUPS WITH AND WITHOUT DIABETES

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Introduction

- Vitamin E (VitE) is an anti-oxidant used as a therapy for non-alcoholic steatohepatitis (NASH). Studies indicate a link between the severity of NASH and degree of oxidative stress. [(1)]
- VitE can retard hepatic fibrosis by modulating cell injury and proliferation. It has been shown to decrease inflammation, transaminitis and steatosis in NASH patients without Type 2 diabetes (T2DM). [(2)]
- Current guidelines do not support its use in patients with T2DM. [(3)] We conducted a study in a Veteran population to assess trends in transaminases and fibrosis 4 (FIB-4) scores after VitE use in patients with NASH, both with and without T2DM.

Methods

- Veterans Affairs (VA) Informatics and Computing Infrastructure was used to build patient cohorts from VA hospitals nationwide.
- ICD-10 codes identified patients with NASH and T2DM.
- Retrospective analysis of labs and FIB-4 scores was performed.
- Before/after analysis was done to study the effect of VitE on outcomes. Wilcoxon signed-rank test with continuity correction analyzed FIB-4 scores, and a linear mixed-effect model assessed aspartate aminotransferase (AST) and alanine aminotransferase (ALT) trends.

Patient characteristics

- Of 1572 patients with NASH on VitE, 658 had complete data.
- Mean age was 55.8 years.
- 588 (89.4%) patients were male and 528 (80.2%) Caucasian.
- 283 (43.0%) patients had T2DM, and 518 (78.7%) were obese (BMI≥30).

Results

- Both diabetic and non-diabetic groups had significant decline in mean AST and ALT over 2 years ($p<0.05$), with no significant difference between the groups in their rate of change. (Figure 1)
- Interestingly, the non-diabetic group had higher baseline AST and ALT.
- Both groups had significantly lower FIB-4 scores 1 year after VitE, p=0.001 and 0.0005, respectively. (Table 1)
- Mean BMI and hemoglobin A1c were lower after two years.

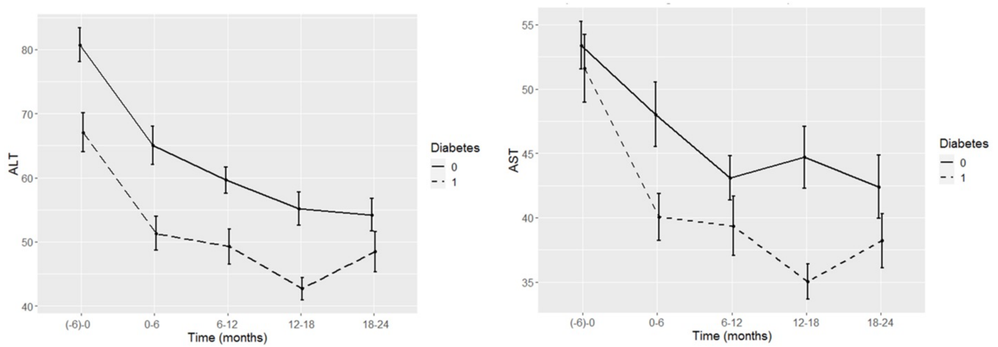

Figure 1. Line plots of ALT and AST over time in NASH patients in diabetes and non-diabetes groups

Wilcoxon signed-rank test with continuity correction (FIB-4 Scores)				
Diabetes Group (p=0.001765)				
Time	count	Q1	median	Q3
before (-26 to 1 week)	283	1.17	1.70	2.55
after (26 to 52 weeks)	283	1.07	1.58	2.45
Non-Diabetes Group (p=0.000549)				
Time	count	Q1	median	Q3
before (-26 to 1 week)	375	0.88	1.25	1.88
after (26 to 52 weeks)	375	0.782	1.19	1.75

Table 1. Fib-4 summary statistics before and after Vitamin E in diabetes and non-diabetes groups

Conclusions

- VitE therapy reduced ALT and AST levels in both diabetic and non-diabetic groups.
- ALT is a reliable marker of liver injury, and FIB-4 score is a validated predictor of liver fibrosis. [(4)] Lower FIB-4 scores in both groups suggest that VitE may also improve fibrosis, likely via reducing long-term inflammation, though effects were modest.
- Study limitations include a retrospective model and confounding effects of other medications or weight-reduction strategies that may have lowered BMI and hemoglobin A1c.
- Even so, VitE may have a role in improving inflammation and fibrosis in NASH in both diabetic and non-diabetic groups.
- Further prospective studies are needed to clarify the role of VitE in treating NASH patients with T2DM.

References

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