Clinical Profile of Nonalcoholic Fatty Liver Disease (NAFLD) in Adults with Type 2 Diabetes Mellitus (T2DM)

TARGET-NASH

TARGET PharmaSolutions

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INTRODUCTION

- Nonalcoholic fatty liver disease (NAFLD), ranging from simple steatosis to a more severe form, steatohepatitis (NASH), is an increasingly common problem in patients with T2DM
- NASH is associated with progression to cirrhosis and extrahepatic complications (i.e. – cardiovascular disease [CVD]).
- The overall aim of TARGET-NASH is to determine the natural history of NAFLD and to evaluate treatment regimens used in usual clinical practice.

AIM

To evaluate and study the clinical profile of NAFLD in patients with or without T2DM being managed in a normal clinical practice

METHODS

- TARGET-NASH is a longitudinal observational study of participants followed at 55 sites (41 academic/14 community) in the U.S., and includes patients across the entire spectrum of NAFLD.
- Data from medical records (including narratives, labs, imaging, pathology, procedures, and outcomes) are centrally abstracted into a common database platform.
- Data is monitored for completeness and accuracy.
- The clinical profile of participants with NASH, defined by biopsy or pragmatic definition were compared in those with T2DM or non-diabetics (nonDM).
- Univariate p-values were obtained from a test of homogeneity: Chi-square test for categorical parameters, analysis of variance (ANOVA) test for continuous parameters.

Disease Category Definitions	
NASH	**Confirmed by biopsy:** • Steatohepatitis by Brunt criteria OR NAS total score ≥ 4 **Clinical diagnosis:** • ALT > 19 U/L for adult female (22 child), > 30 U/L for adult male (26 child) and; • Hepatic steatosis on biopsy or CT/US/MRI and; • ≥ 1 of the following: BMI ≥ 30, type 2 diabetes, dyslipidemia
NAFLD Cirrhosis	**History of NAFLD with:** Liver biopsy with fibrosis stage = 4 OR Liver biopsy with fibrosis stage = 3 and 1 ≥ clinical signs of cirrhosis OR 2 or more clinical signs of cirrhosis OR FibroScan® elastography ≥ 11 kPa

STATEMENT & DISCLOSURES

RESULTS

Diabetes and Comorbidities in Adult TARGET-NASH Participants: Diabetes vs No Diabetes (N=1674)

SUMMARY	Diabetes (N=926)	No Diabetes (N=869)	p-value
	Demographic Parameters		
Age at Study Entry (years) Median (n)	61.0	56.0	<0.0001
Gender (%) Female Male	64.7 35.3	54.5 45.5	<0.0001
Race (%) White Black Asian	80.2 6.5 7.7	74.2 4.1 12.3	0.0009
BMI (kg/m²) (%) <32 >=32	37.3 62.7	49.3 50.7	<0.0001
AUDIT Score >7 (%) No Yes	99.4 0.6	97.9 2.1	0.0073

Liver Biopsy

SUMMARY	Diabetes (N=926)	No Diabetes (N=748)	p-value
	Liver Biopsy Results		
Participant with Biopsy (%)	44.2	43.0	0.6459
NAS Total Score (%) 0 1 2 3 4 5 6 7 8	0.5 6.9 8.4 23.2 24.1 24.1 9.9 2.5 0.5	0.0 6.0 13.1 23.2 31.5 19.0 6.5 0.6 0.0	0.6459
NAS Fibrosis Score(%) 0 1 2 3 4	16.7 10.0 23.3 10.0 40.0	32.4 23.5 11.8 11.8 20.6	0.0341

Comorbidities of Interest (% participants)[1]

Participants are counted once in each term for which they have documented history.

Legend: Diabetes (N=932) | No Diabetes (N=748)

SUMMARY

- Patients with T2DM and NASH were slightly older (median 61 vs. 56 years) and had a higher BMI (34.0 vs 32.0 kg/m² , both p<0.0001).
- The prevalence rates of hypertension (87 vs. 57%), hyperlipidemia (76 vs. 52%), cardiovascular disease (28 vs. 17%), and cancer (17 vs. 11%); all p-value <0.0001) were higher in T2DM to nonDM.
- Among patients with a liver biopsy, advanced fibrosis was seen in 57% of T2DM vs. 36% nonDM, including 37 vs 21% with cirrhosis, respectively (both p<0.0001).

CONCLUSIONS & CLINICAL IMPLICATION

- In this large cohort of NASH participants managed in standard clinical practice, patients with T2DM had substantially different clinical profiles compared to nonDM and are at a much greater risk of cirrhosis, cancer and cardiovascular disease
- Endocrinologists and other healthcare providers should keep this in mind when assessing patients with diabetes and NASH