RESEARCH PAPER

Serial LDL-C Response During Ezetimibe 20 mg Monotherapy in an Adult Male with Severe Hypercholesterolemia

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Abstract

Background: Ezetimibe is an intestinal cholesterol-absorption inhibitor that at the standard 10 mg/day dose generally lowers LDL cholesterol (LDL-C) by approximately 18% as monotherapy. The present longitudinal observation describes the lipid response and laboratory safety profile associated with ezetimibe 20 mg monotherapy in an adult male with marked hypercholesterolemia.

Case and serial observations: Baseline LDL-C was 6.90 mmol/L (approximately 267 mg/dL), with triglycerides of 2.60 mmol/L. After approximately 30 days of ezetimibe 20 mg, LDL-C decreased to 5.13 mmol/L, representing a 25.7% reduction from baseline. On the latest follow-up, LDL-C was 4.74 mmol/L (approximately 183 mg/dL), corresponding to an overall reduction of 31.3% from baseline. The additional decline from 5.13 to 4.74 mmol/L represents approximately 7.6% relative reduction from the day-30 value. Triglycerides decreased from 2.60 to 2.18 mmol/L (16.2% reduction). At the latest assessment, total cholesterol was 6.50 mmol/L, HDL-C 1.16 mmol/L, ALT 16.73 U/L, AST 21.13 U/L, creatinine 78.1 µmol/L, and HbA1c 5.25%.

Conclusion: This longitudinal observation demonstrates a sustained LDL-C reduction during ezetimibe 20 mg monotherapy, with normal liver enzymes and renal function at the latest follow-up. The magnitude of LDL-C lowering is greater than the average response reported with standard-dose ezetimibe monotherapy, but the observation is insufficient to establish dose superiority or clinical-outcome benefit. Controlled comparative studies are required to determine whether ezetimibe 20 mg provides clinically meaningful incremental lipid lowering over the approved 10 mg dose.

Keywords

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1. Introduction

Ezetimibe selectively inhibits intestinal cholesterol absorption through inhibition of the Niemann-Pick C1-Like 1 pathway. Clinical trials and systematic reviews of ezetimibe monotherapy at 10 mg/day have generally demonstrated an LDL-C reduction in the range of approximately 17–19%. Long-term studies have shown that the LDL-C-lowering effect of standard-dose ezetimibe can be sustained with an acceptable safety profile.

The present report updates a previously prepared longitudinal case report by incorporating a further lipid and biochemical assessment. The primary purpose is descriptive: to document the trajectory of LDL-C over serial measurements during ezetimibe 20 mg monotherapy and to describe the contemporaneous safety laboratory profile.

Importantly, ezetimibe 10 mg once daily is the established standard clinical dose. The use of 20 mg/day in this report should therefore be considered a research/off-label exposure rather than an established routine dosing recommendation. This case cannot determine whether 20 mg is superior to 10 mg because there is no within-patient 10 mg comparator.

2. Case Presentation and Serial Laboratory Findings

The subject is an adult male followed in a cardiology/cardiovascular screening setting for marked hypercholesterolemia. The current laboratory report is dated 10 August 2026 and records an age of 37 years. The original manuscript had used a different age at an earlier time point; the final submission should reconcile the patient's age with the exact baseline date before journal submission.

At baseline, LDL-C was 6.90 mmol/L, with triglycerides 2.60 mmol/L. Following treatment with ezetimibe 20 mg/day, LDL-C decreased to 5.13 mmol/L at approximately 30 days. The latest assessment showed a further decline to 4.74 mmol/L.

Time point	LDL-C (mmol/L)	LDL-C (mg/dL)	Change from baseline
Baseline	6.90	≈267	Reference
≈30 days	5.13	≈198	↓ 25.7%
Latest follow-up	4.74	≈183	↓ 31.3%

The total observed LDL-C reduction from baseline to the latest follow-up was 2.16 mmol/L (approximately 84 mg/dL), equivalent to 31.3%. From the 30-day value of 5.13 mmol/L to the latest value of 4.74 mmol/L, LDL-C declined by 0.39 mmol/L, or approximately 7.6% relative to the day-30 value.

Laboratory parameter	Latest result	Reference/interpretation
Total cholesterol	6.50 mmol/L	Elevated
LDL-C	4.74 mmol/L	Markedly elevated
HDL-C	1.16 mmol/L	Within laboratory range

Laboratory parameter	Latest result	Reference/interpretation
Triglycerides	2.18 mmol/L	Mildly elevated
ALT	16.73 U/L	Normal
AST	21.13 U/L	Normal
Creatinine	78.1 µmol/L	Normal
HbA1c	5.25%	Normal
Sodium	140.23 mmol/L	Normal
Potassium	3.75 mmol/L	Normal
Magnesium	0.92 mmol/L	Normal

3. Discussion

The most notable finding is the sustained LDL-C reduction from 6.90 mmol/L at baseline to 4.74 mmol/L on the latest assessment. The overall reduction of 31.3% exceeds the average LDL-C reduction reported in randomized trials of standard-dose ezetimibe monotherapy, which is approximately 18%. However, an individual response can differ substantially from a population mean, and this observation should not be interpreted as evidence that 20 mg is pharmacologically or clinically superior to 10 mg.

The serial measurements also show a pattern of diminishing incremental reduction: approximately 25.7% reduction by the 30-day assessment followed by a further approximately 7.6% reduction in absolute LDL-C relative to the day-30 value. This may reflect biological variability, adherence, diet, timing of measurements, or a true continued treatment effect. Because the measurements were obtained in routine clinical follow-up rather than under a controlled trial protocol, causal attribution should remain cautious.

The latest biochemical safety profile is reassuring. ALT and AST were within the laboratory reference range, creatinine was normal, and HbA1c was 5.25%. These findings support continued laboratory tolerability in this individual at the time of the latest assessment, although they do not establish long-term safety at 20 mg/day.

The persistent LDL-C level of 4.74 mmol/L (approximately 183 mg/dL) remains substantially elevated. For clinical care, treatment decisions should be based on the patient's overall cardiovascular risk, possible familial hypercholesterolemia, prior cardiovascular disease, treatment tolerance, and current lipid-management guidelines. The research observation itself should not be used to recommend ezetimibe 20 mg as a routine dose.

4. Comparison With Published Ezetimibe Evidence

Evidence	Typical ezetimibe regimen	Reported LDL-C effect
Systematic review/meta-analysis	10 mg/day monotherapy	≈18.6% mean reduction vs placebo
Pooled phase III trials	10 mg/day	≈18.2% mean reduction
Current longitudinal observation	20 mg/day	31.3% reduction from baseline

The current observation is therefore hypothesis-generating. A randomized dose-comparison study would be needed to determine whether 20 mg produces a reproducible incremental effect over 10 mg.

5. Proposed Larger Phase 1 Research Study – Updated Framework

The previously developed research program includes 200 participants: 100 with coronary artery disease (CAD) and 100 without CAD. Within each major category, participants were planned to be divided into diabetic and non-diabetic dyslipidemia subgroups. The principal treatment comparison was ezetimibe 20 mg monotherapy versus rosuvastatin 20 mg plus ezetimibe 10 mg, with longitudinal lipid and safety assessment.

Study component	Previously planned structure
Total sample	200 patients
CAD	100 patients
Non-CAD	100 patients
Diabetes stratification	Diabetic and non-diabetic subgroups
Treatment arm 1	Ezetimibe 20 mg monotherapy
Treatment arm 2	Rosuvastatin 20 mg + ezetimibe 10 mg
Main efficacy outcome	Percent change in LDL-C from baseline
Secondary lipid outcomes	TC, HDL-C, TG, non-HDL-C; consider ApoB if available
Safety outcomes	ALT, AST, creatinine, adverse events; CK when clinically indicated
Follow-up	Longitudinal follow-up; exact visit schedule to follow the approved protocol

The newly available case observation can be used as preliminary, hypothesis-generating evidence supporting further investigation of the ezetimibe 20 mg arm. It should not be inserted into the 200-patient trial results unless the patient is formally enrolled in that protocol and the measurements satisfy the prespecified data-collection and eligibility criteria.

6. Recommended Statistical Analysis for the Larger Study

- Primary endpoint: percentage change in LDL-C from baseline to the prespecified primary follow-up visit.
- Compare treatment groups using an intention-to-treat analysis where appropriate.
- Adjust or stratify for CAD status and diabetes status because these were prespecified clinical strata.
- Report mean ± SD for approximately normally distributed continuous variables or median (IQR) for skewed variables.
- Report between-group effect estimates with 95% confidence intervals and P values.
- Use repeated-measures or mixed-effects models if multiple follow-up lipid measurements are collected.
- Prespecify handling of missing data and treatment discontinuation.
- Safety analysis should summarize adverse events and clinically important laboratory abnormalities by treatment group.

7. Limitations of the Updated Case Observation

- Single-patient observation without a randomized control group.
- No within-patient comparison with ezetimibe 10 mg.
- Potential confounding from diet, adherence, laboratory variability, and other lipid-lowering interventions if present.
- The exact duration between the 30-day and latest measurement is not documented in the information currently available and should be added from the medical record.
- Familial hypercholesterolemia status has not been established in the available data and should be assessed clinically if relevant.
- The case does not provide cardiovascular outcome evidence.
- The current report documents biochemical tolerability only and cannot establish long-term safety of the 20 mg dose.

8. Conclusion

Serial follow-up in this adult male demonstrated a sustained LDL-C reduction during ezetimibe 20 mg monotherapy, from 6.90 mmol/L at baseline to 5.13 mmol/L after approximately 30 days and subsequently to 4.74 mmol/L. The overall reduction was 31.3%, while triglycerides decreased by 16.2% from the previously recorded baseline. The latest liver enzymes, renal function, and HbA1c were within the reported laboratory reference ranges. These findings support further controlled investigation but do not establish the superiority or routine clinical appropriateness of ezetimibe 20 mg over the standard 10 mg dose.

9. Items to Complete Before Journal Submission

- Confirm the exact baseline date, treatment start date, and exact dates of each lipid measurement.
- Confirm adherence to ezetimibe 20 mg and document any concomitant lipid-lowering drugs, supplements, and major dietary changes.
- Reconcile the patient's age in the manuscript with the age at each laboratory time point.
- Document cardiovascular history, family history of premature ASCVD, family history of hypercholesterolemia, and physical findings relevant to familial hypercholesterolemia.
- Add ApoB and lipoprotein(a) if they were measured or become available.
- Document informed consent and institutional/ethics approval status as required by the target journal.
- For the 200-patient study, finalize the protocol, sample-size calculation, randomization method, primary endpoint, follow-up schedule, and statistical analysis plan before recruitment or analysis.

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Research draft – not for clinical prescribing or journal submission without investigator review.