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Reductions in Lp(a) and Cardiovascular Risk Following a Remotely Supervised Water-Only Fast in a Postmenopausal Woman Already Adherent to a Whole-Plant-Food Diet: A Case Report

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Abstract
This report describes the case of a postmenopausal, White female of normal weight with a history of idiopathic dyslipidemia. She presented with high systolic blood pressure, total cholesterol, low-density lipoprotein cholesterol, and lipoprotein(a) [Lp(a)]—an independent and causal risk factor for atherosclerotic cardiovascular diseases—despite eating an exclusively whole-plant-food diet free of added salt, oil, and sugar (SOS-free) and adhering to other health-promoting practices for the past 40 years. The patient undertook a remotely administered, five-day water-only fast, and six weeks later demonstrated clinically meaningful improvements in cardiometabolic markers; notably, her blood pressure normalized and Lp(a) dropped by -32.5%, even with negligible body weight loss. These results provide a preliminary observation that prolonged water-only fasting may influence Lp(a) levels, beyond those gained from eating a whole-plant-food diet and healthy lifestyle, particularly for genetic or idiopathic cardiovascular abnormalities.

Keywords: lipoprotein(a), water-only fasting, whole-plant-food diet, cardiometabolic risk, postmenopausal, case report

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Introduction

Lipoprotein(a) [Lp(a)] is comprised of a low-density lipoprotein (LDL)-like particle covalently linked to a variably sized apolipoprotein(a) [Apo(a)] molecule, with plasma

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concentrations ranging from less than 3 to over 600 nmol/L.[1] The physiological role of Lp(a) remains poorly understood, but it may promote tissue repair and modulate inflammation through mechanisms mediated by Apo(a). At higher concentrations, Lp(a) is proinflammatory, proatherosclerotic, procalcific, and prothrombotic.[1]

Approximately 20% of the population has a genetically determined Lp(a) concentration of more than 125 nmol/L, which is an independent and causal risk factor for atherosclerotic cardiovascular diseases.[1] Despite ongoing late-stage clinical trials, no approved pharmacologic therapies specifically target Lp(a), and modifiable factors have demonstrated little to no effect, leaving elevated Lp(a) as a persistent challenge in cardiovascular disease management.[2]

Medically supervised, prolonged water-only fasting, during which only water is consumed for a period of up to 40 days, followed by an exclusively whole-plant-food diet free of added salt, oil, and sugar (SOS-free) is emerging as a safe and effective intervention for reducing cardiovascular disease risk.[3-6] Here we report the case of a postmenopausal woman with elevated cardiovascular disease risk who was already strictly adherent to an SOS-free diet before undergoing a remotely administered, water-only fast. This case is notable as it provides evidence on the effects of prolonged water-only fasting on Lp(a) in a population at heightened cardiovascular risk and for whom targeted interventions remain limited. It also demonstrates the potential feasibility and safety of home-based, water-only fasting when undertaken with remote clinical supervision in an appropriately selected patient. Informed consent was obtained for publication of this case report.

Patient Information

This report describes the case of a 78-year-old, White female of normal weight who exercised regularly, obtained adequate sleep and sunlight, minimized stress, and adhered to an SOS-free diet for over 40 years prior to the intervention. She wanted to undertake a prolonged water-only fast in an attempt to manage transient vertigo and associated nausea, as well as mild right hip and lower back pain that had persisted for several weeks without intervention. She did not smoke, drink alcohol, or take any recreational drugs. The patient reported a more than 15-year history of elevated blood lipids managed only with diet and lifestyle. She did not take any medications or have any other symptoms, and her family history was negative for cardiovascular disease.

Clinical findings and diagnostic assessment

Prior to beginning the intervention (Figure 1), the patient underwent an in-person examination conducted by a clinician trained in fasting supervision to assess her overall physical and mental health and to identify any potential contraindications to water-only fasting, as outlined by Finnell et al.[3] The physical exam was normal aside from mild placatory tenderness in the area of the right hip bursae and elevated systolic/diastolic blood pressure of 147/74 mmHg. She weighed 54.3 kg with a BMI of 21.9 kg/m^2. Routine pre-fast laboratory testing, including complete blood count and comprehensive metabolic panel, indicated that the patient's electrolytes, liver enzymes, kidney function, fasting glucose, and other markers were within normal range. The comprehensive examination did not identify underlying causes of vertigo nor any contraindications to fasting. The patient also had laboratory testing associated with her history of persistent dyslipidemia, including lipid panel, C-reactive protein (CRP), and Lp(a), which demonstrated high total cholesterol (TC) of 6.7 mmol/L, LDL cholesterol of 4.4 mmol/L, and Lp(a) of 305.2 nmol/L (Table 1).

Table 1. Changes in biomarkers after a five-day water-only fast followed by SOS-free diet

	Baseline	End-of-Refeed	Six-Week Follow-Up	% Change (BL to FU)
SBP/DBP, mmHg (<120/80 mmHg)	**147**/74	111/71	114/60	-22/-19
BW, kg	54.3	50.5	52.1	-4
BMI, kg/m^2 (18.5–24.9 kg/m^2)	21.9	20.4	21	-4
TC, mmol/L (2.59– 5.15 mmol/L)	**6.7**	n/a	**5.8**	-13
HDL, mmol/L (≥1.01 mmol/L)	1.7	n/a	1.6	-6
TC/HDL ratio (0.0-5.0, lower scores indicating less CVD risk)	4	n/a	3.7	-23
LDL, mmol/L (< 2.56 mmol/L)	**4.4**	n/a	**3.7**	-16
VLDL, mmol/L (<0.78 mmol/L)	0.7	n/a	0.6	-14
TGs, mmol/L (<3.86 mmol/L)	1.9	n/a	1.4	-40
Lp(a), nmol/L (<125 nmol/L)	**305.2**	n/a	**206.0**	-33
CRP, nmol/L (< 28.6 nmol/L)	17.2	n/a	9.0	-48

Notes: Reference intervals are below the respective variable. Numbers in red exceed the reference range. CVD, cardiovascular disease; BL, baseline; FU, six-week follow-up; SBP, systolic blood pressure; DBP, diastolic blood pressure; BW, body weight; BMI, body mass index; TC, total cholesterol; HDL, high-density lipoprotein; LDL, low-density lipoprotein; VLDL, very-low-density lipoprotein; TG, triglycerides; Lp(a), Lipoprotein(a); CRP, C-reactive protein; kg, kilogram; m, meter; cm, centimeter; mmHg, millimeters of mercury; mmol, millimolar; L, liter; nmol, nanomole; %, percent

Therapeutic intervention

The patient was approved to participate in a home-based, water-only fasting intervention, similar to previously described medically supervised protocol,[3] because she demonstrated the ability to remain at home and maintain a low-stress, restful environment throughout the entire intervention. Before the intervention began, she secured an adequate supply of distilled water for the fasting period, equipment for monitoring vital signs at home, including a blood pressure cuff, thermometer, oximeter, and scale, as well as vegetable broth and juice for safely ending the fast if necessary. The patient also had reliable internet and phone service to support regular remote check-ins with the fasting supervisor, as well as access to transportation in the event that in-person medical care was needed. Prepared whole-plant, SOS-free foods were procured for the two-day refeeding period. This patient was considered particularly well-suited for a home-based fasting intervention due to her preexisting whole-plant-food diet, health-conscious lifestyle, and supportive home environment. The patient undertook a home-based intervention, consisting of five days of water-only fasting followed by two days of whole-plant food refeeding (Figure 1).

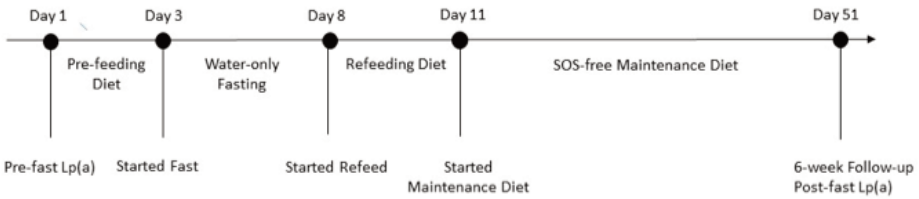

Figure 1. Intervention timeline

She began by eating cooked and raw fruits and vegetables for two days (Figure 1). After dinner on the second day, she did not consume any food or drink except for at least 1.2 L distilled water per day for the next five days. On the morning of the eighth day, she ended the five-day fast with a standard five-phase refeeding diet beginning with vegetable broth and juices and ending with an unrestricted whole-plant-food, SOS-free diet at dinner of the tenth day. Throughout the intervention, the patient met daily with a trained fasting supervisor to monitor adherence and review vital signs, including blood pressure, pulse, temperature, weight, and oxygen saturation, along with other signs and symptoms that remained within normal range. There were no indications or reports of adverse events throughout the intervention. The patient did not have additional laboratory testing during the intervention because of the short fast duration (less than seven days) and lack of clinical indication. At the end of the 10-day intervention (Figure 1), her BMI dropped to 20.4 kg/m^2, systolic/diastolic blood pressure (SBP/DBP) normalized to 111/71 mmHg, and she no longer experienced vertigo, nausea, or pain (Table 1).

Follow-up and outcomes

The patient completed follow-up laboratory examinations six weeks after the intervention and reported that she had eaten a diet consisting of exclusively whole-plant, SOS-free foods. The results indicated that although her TC and LDL were still not within normal range, the values dropped 13% and 16%, respectively (Table 1). Remarkably, her Lp(a) also dropped 33% to 206 nmol/L and CRP dropped 48% to the lower end of normal. Moreover, she reported that the vertigo, nausea, and pain did not recur, and she did not experience any adverse events during the follow-up period.

Discussion

This report demonstrates that a normal-weight, postmenopausal woman experienced sustained improvements in vertigo and associated nausea, hip and back pain, and high blood pressure, TC, LDL, and CRP following a five-day, water-only fast.[4,5] Notably, she also experienced a 33% reduction in her elevated Lp(a) level. These outcomes are particularly significant given this patient's long-standing adherence to an exclusively whole-plant-food, SOS-free diet, exercise, and other healthy lifestyle practices. Given the limited efficacy of dietary change alone in lowering Lp(a) and LDL, the combination of fasting and an SOS-free diet may represent a promising therapeutic option for patients with resistant dyslipidemias.

There have been two case reports of substantial reductions in Lp(a) following dietary interventions that promote ketosis by limiting dietary glucose.[7,8] One report described a normal-weight, 55-year-old White man who experienced an approximately 40% reduction in circulating Lp(a) levels during two-week periods of a very-low-calorie ketogenic diet, with levels returning to baseline during alternating periods of a high-carbohydrate diet.[8] Another report from our group described a normal-weight,

68-year-old White man whose Lp(a) decreased by 39% six weeks after a 10-day medically supervised water-only fast followed by strict adherence to a whole-plant-food, SOS-free diet.[7] These reports, along with the case presented here, suggest that the absence of dietary glucose may directly or indirectly promote reductions in elevated Lp(a), potentially through adaptive mechanisms such as increased ketogenesis, reduced inflammation, improved hormonal regulation, and/or enhanced liver function, among other possibilities.[4-6,9] For example, prolonged water-only fasting may suppress hepatic lipogenesis, which may subsequently reduce hepatic Lp(a) production, thereby lowering circulating concentrations.

This report also demonstrates the feasibility of administering a home-based, water-only fasting and refeeding intervention in a postmenopausal woman. This may be particularly significant given the cardiovascular health disparities that persist in this demographic. In this patient's case, pre-existing adherence to an SOS-free diet, engagement in health-promoting practices, and overall good health likely facilitated her ability to water-only fast without difficulty. Importantly, prolonged water-only fasting is associated with a very low risk of experiencing a serious adverse event (e.g., dehydration, syncope, hyponatremia, or refeeding syndrome)[3] and therefore proper patient selection, sufficient education, and daily monitoring by a trained clinician are necessary to ensure that home-based interventions are implemented according to protocol and prevent potentially serious complications.

This case report has several important limitations. As a single-patient observation without a control group, the study is subject to threats to internal validity that preclude any inference of causality. Selection bias is also a concern, as the patient represents a highly specific sub-population—a health-conscious individual with long-term adherence to an SOS-free diet, regular exercise, adequate sleep, ample sun exposure, and minimal stress—which limits the generalizability of these findings.

Furthermore, the relative contribution of the water-only fast versus the patient's ongoing dietary and lifestyle regimen to the observed reduction in Lp(a) remains unclear, particularly since Lp(a) was not measured again until six weeks post-fast, by which time the patient had resumed her usual diet and routine. Moreover, the long-term sustainability of the observed effects is unknown, and the degree to which similar results would occur in other individuals or be maintained over time remains uncertain. These limitations underscore the need for rigorously designed clinical trials with appropriate control groups and broader populations to better elucidate the effects of water-only fasting and SOS-free diets on Lp(a) levels and related cardiovascular outcomes.

Conclusion

This case underscores the potential of remotely administered, prolonged water-only fasting as an adjunctive intervention for managing elevated Lp(a) and other cardiovascular risk factors in patients with limited treatment options. The sustained reductions in Lp(a), CRP, LDL, TC, and blood pressure highlight the potentially multifaceted benefits of combining fasting with an exclusively whole-plant-food, SOS-free diet. Further research is warranted to explore the safety and long-term efficacy of this approach in broader clinical settings.

Conflict of Interest

Alan C. Goldhamer is the owner of TrueNorth Health Center and president of the Board of Directors of the TrueNorth Health Foundation.

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