

Challenging Case in Clinical Practice: Total Resolution of Hydronephrosis and Ureterectasis and Partial Regression of an Unspecified Retroperitoneal Mass Following a Medically Supervised, Water-Only Fast and an Exclusively Whole-Plant-Food Diet

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Abstract

A 66-year-old woman presented with an unspecified retroperitoneal mass measuring $\sim 4.4 \times 4.4$ cm with concomitant hydronephrosis, ureterectasis, and a simple kidney cyst as confirmed by magnetic resonance imaging and computed tomography (CT) scans. The patient arrived to the center during the intervening 8-week period between the initial scans and the follow-up CT-guided biopsy. The visit was planned 3 months prior with the intention of improving her overall health. She elected to undergo a 13-day medically supervised, water-only fast followed by an 11-day refeeding protocol with a whole-plant-food diet free of added salt, oil, and sugar. Eighteen days after her departure, she had the follow-up CT-guided biopsy that showed the retroperitoneal mass had reduced to 2.8×1.8 cm, no longer requiring biopsy, and that the hydronephrosis and ureterectasis had also resolved. The time of these observations suggests a possible correlation between fasting and/or diet and the regression of unspecified masses as well as reduction of kidney and ureter inflammation.

Keywords: water-only fasting, plant-food diet, retroperitoneal mass, kidney, ureter, inflammation

Introduction

Primary retroperitoneal masses are a heterogeneous group of benign and malignant lesions that grow independently

of organ attachment in the retroperitoneum—the space behind the peritoneum in the abdominal cavity.¹ More than half of identified masses are reported to be malignant neoplasms, including sarcomas, lymphomas, epithelial tumors, paragangliomas, and metastatic tumors. Benign lesions include fibromatosis, renal angiomyolipoma, benign paraganglioma, neurofibroma, lipoma, angiofibroma, and schwannoma. Retroperitoneal masses are frequently identified on palpation after having grown > 20 cm or incidentally using magnetic resonance imaging (MRI) and computed tomography (CT) scans.² These images also expose morphological characteristics that are used to classify the masses as cystic or solid and neoplastic or nonneoplastic and determine whether they are connected to other structures. This information is combined with clinical features and personal demographics to make a differential diagnosis, but a definitive diagnosis typically requires tissue biopsy for histologic classification.^{3,4}

The treatment of retroperitoneal masses can be challenging and depends on the type, location, size, vascularization, and involvement of adjacent organs.² Current treatments include disease-specific pharmaceuticals such as corticosteroids for fibrosis, radiotherapy, chemotherapy, and/or surgical excision. There are currently not any low-risk noninvasive interventions that can be started while the patient is awaiting biopsy. In this study, we present the case of a clinically significant regression of an unspecified retroperitoneal mass and several other conditions directly after a water-only fast and a whole-plant-food dietary intervention.

Case Presentation

On August 1, 2017, a 66-year-old female with a medical history of obesity, hypertension, hypothyroidism, lumbago, degenerative disk disease, and sacroiliac joint dysfunction made a reservation to visit our health center with the intention of undergoing an elective, residential, medically supervised, water-only fasting and dietary intervention. The goal of her visit was to manage her overall health and to learn more about an exclusively whole-plant-food diet, which she had been transitioning to over the previous year. She arrived to our health center on December 7, 2017, with recent onset intra-abdominal and pelvic swelling associated with pain and nausea. The patient reported that 2 weeks before arrival, on November 23, 2017, she had MRI scans that incidentally revealed a retroperitoneal mass of unknown origin. On December 4, 2017, CT scans of the associated areas confirmed the presence of a left-sided retroperitoneal mass surrounding the left common iliac artery measuring $\sim 4.4 \times 4.4$ cm, accompanied by concomitant hydronephrosis, proximal ureterectasis, and a simple cyst of the left kidney. The finding in the retroperitoneum was indicative of retroperitoneal fibrosis, but could not be differentiated from a malignant neoplasm. Her radiologist ordered a follow-up CT-guided biopsy of the mass for further analysis that was scheduled for 8 weeks later and treatment was pending those results. Her visit to the center happened to occur during the 8-week waiting period. There were no specific expectations that fasting or diet would significantly improve the retroperitoneal mass and the CT-guided biopsy was to be performed as scheduled.

On arrival, the patient was approved for water-only fast based on adequate nutrient and electrolyte stores, normal creatinine and hemoglobin levels, normal kidney function, and no contraindications⁵; having a retroperitoneal mass is not a contraindication. The patient completed a 13-day water-only fast during which she consumed only distilled water ad libitum (minimum 40 ounces per day), continued levothyroxine for

hypothyroidism at half of the prescribed dose, and limited physical activity.⁵ For the next 11 days, she followed the standard refeeding protocol and consumed plant foods of gradually increasing complexity beginning with fresh fruit and vegetable juices and ending with a whole-plant-food diet of raw and cooked vegetables, fruits, beans and other legumes, whole grains, small amounts of avocado or nuts and seeds, and free of added salt, oil, and sugar.⁵ During the treatment, the patient's vital signs and symptoms were monitored twice daily. She reported transient mild nausea, diarrhea, abdominal pain, fatigue, and episodic chest tightness upon exertion, but did not have any signs of a serious cardiovascular event based on results of an electrocardiogram and physical examination and all symptoms resolved. The patient had unremarkable complete blood counts, comprehensive metabolic panels, and urinalysis. No adjunctive therapies were initiated throughout her stay. By the end of treatment, the patient's weight reduced from 105.6 to 98.6 kg, corresponding to a body mass index of 40.6 to 37.9 kg/m² and an average weight loss of 2.04 kg/week over the entire 24-day intervention. Her blood pressure decreased from 164/88 to 124/82 mmHg without the use of antihypertensive medications. The patient was advised to continue the recommended diet indefinitely.

On January 18, 2018, 18 days after leaving the center, the patient went for the previously scheduled CT-guided biopsy, but the CT scan revealed that the mass had regressed from 4.4×4.4 cm to 2.8×1.8 cm (Fig. 1) and the needle biopsy was not performed. In addition, the imaging indicated normal kidney and ureter configuration, corresponding to a total resolution of the hydronephrosis and ureterectasis. On September 11, 2019, the patient reported that she is doing great since her water-only fast in 2017. She reported that her tumor status is currently unknown and that she will not have any more CT scans because symptoms are absent. Her health continues to improve, which she credits to a diet high in whole-plant foods. The patient has provided written informed consent for the publication of this article and the use of images.

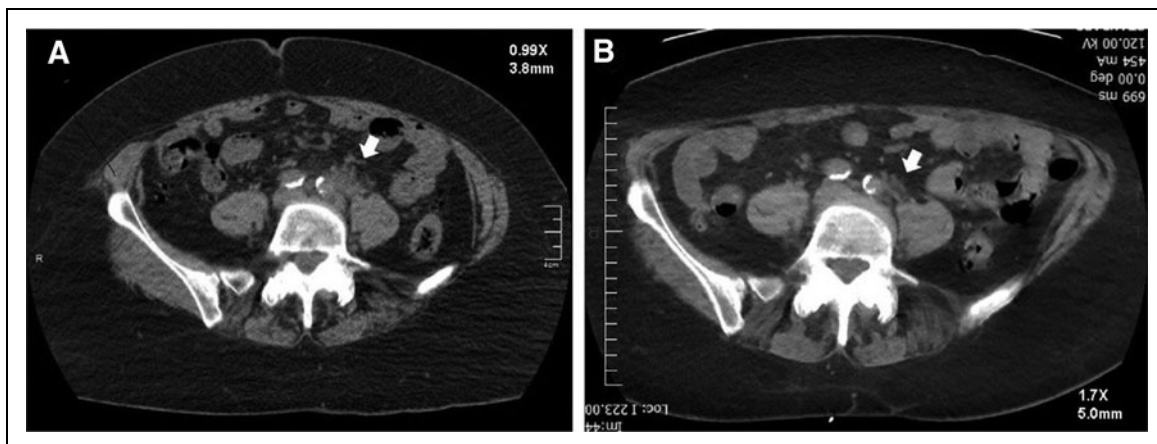


Figure 1. CT images of abdomen (A) before water-only fast (zoom factor: $0.99 \times$; thickness: 3.8 mm) and (B) after water-only fast and dietary intervention (zoom factor: $1.7 \times$; thickness: 5 mm). Arrow indicates region of retroperitoneal mass.

Discussion

We have reported on the total resolution of hydronephrosis and ureterectasis and partial regression of an unspecified retroperitoneal mass that coincided with a 13-day water-only fast and an exclusively whole-plant-food dietary intervention. As a result, the patient did not require invasive biopsy. That these three conditions as well as hypertension and obesity all improved in the same timeframe suggests that the water-only fast and a whole-plant-food diet could be causative factors.

Fasting and diet are interventions that affect the whole body rather than target a specific condition. Nonetheless, there are reported mechanisms by which these interventions could reduce inflammation and tumor growth. For example, animal models suggest that fasting potentiates tumor regression by increasing oxidative stress and cell death, activating the immune system, and/or promoting autophagy.⁶ Plant-based diets are also reported to directly or indirectly enhance immune function through various mechanisms in humans and thus have the potential to inhibit cancer growth and reduce inflammation.⁷ Spontaneous regression has also been reported in cases of retroperitoneal fibrosis,⁸ lymphangioma,⁹ leiomyosarcoma,¹⁰ and paraganglioma,¹¹ and it cannot be ruled out in this case. Notably, spontaneous tumor regression has been associated with immune system activation or reactivation¹² and may be the result of similar mechanisms stimulated by fasting and diet.

This novel case report suggests that water-only fasting and/or a whole-plant-food diet may be potentially useful adjunctive treatments for the management of retroperitoneal masses in the intervening time between discovery and biopsy. The interventions may also be potentially useful for managing hypertension, obesity, and inflammatory conditions such as hydronephrosis and ureterectasis. This case sets a precedent for future research.

Author Disclosure Statement

The authors have no conflicts of interest to declare.

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