Waldmann's Disease: Primary Intestinal Lymphangiectasia Diagnosed by 99mTc-labeled Albumin Macroaggregate Scintigraphy - A Case Report in an Adult Patient

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March 30, 2024

"Waldmann's Disease: Primary Intestinal Lymphangiectasia Diagnosed by 99mTc-labeled Albumin Macroaggregate Scintigraphy - A Case Report in an Adult Patient."

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INTRODUCTION

Waldmann's Disease, or Primary Intestinal Lymphangiectasia (PIL), was first described in 1961[1]. It is a rare disorder of unknown etiology that causes protein-losing enteropathy[2]. The condition is characterized by the dilation and leakage of intestinal lymphatic vessels, leading to hypoalbuminemia, hypogammaglobulinemia, and lymphopenia[3]. The symptoms of the disease depend on the severity and location of the affected lymphatic vessels, ranging from mild edema in the lower

extremities to generalized edema, ascites, pleural effusion, chronic diarrhea, among others[1]. While it typically develops in early childhood, we present the case of a 55-year-old male.

CASE REPORT

A 55-year-old male with a medical history of intestinal obstruction, multidrug-resistant pulmonary tuberculosis, and primary antiphospholipid syndrome with a double risk factor, along with the amputation of the left upper limb, 10, 9, and 6 years ago, respectively. The patient reported a 2-year history of chronic diarrhea with a progressive increase in frequency of liquid stools, associated with approximately 5% weight loss in the last 6 months, and edema in the lower limbs that generalized on two occasions.

On physical examination, the patient had a low normal body mass index (17.4 kg/m2), increased intestinal peristalsis, edema in the lower limbs with ++ pitting edema, decreased trophism in the examined limbs, and decreased reflexes.

Laboratory examinations revealed: HGB: 13.5 g/dl, HCT: 39.5%, Platelets: 370,000 mm3, WBC: 5910 mm3, Neutrophils: 84.1% (4970 mm3), Lymphocytes: 9.8% (537 mm3), Eosinophils: 0.3%, PT: 16.7 s, APTT: 37 s, INR: 2, Glucose: 78 mg/dL, Creatinine: 0.54 mg/dL, Serum Albumin: 1.45 g/dL, Total Proteins: 4.12 g/dL, BT: 0.80 mg/dL, BD: 0.34 mg/dL, BI: 0.45 mg/dL, AST (TGO): 27.63 U/L, ALT (TGP): 30.38 U/L, Urea: 18 mg/dL, LDH: 414.30 U/L, Cholesterol: 160 mg/dL, Triglycerides: 130 mg/dL, LDL: 90 mg/dL, HDL: 30 mg/dL, GGT: 4 U/L, Sodium: 137 mEq/L, Potassium: 3.1 mEq/L, Corrected Calcium: 8.6 mg/dL, Chloride: 96.7 mEq/L, Vitamin B12: 50 pg/mL (Reference Range: 197-771), Procalcitonin: 0.37 ng/mL, CRP: Negative, Rapid Test: Non-Reactive, General Urine Examination: Yellow/Turbid, Density: 1015, pH: 6.0, Absent Proteins, Leukocytes: 1-3 x HPF, Erythrocytes: 0-1 x HPF, Bacteria: Absent, 24-Hour Urine Proteins: 98 mg/24 hours, General Stool Examination: Brown color, liquid consistency, negative occult blood, no bacteria, parasites, or yeast, Stool Culture: no growth in 24 hours, Kinyoun Stain: negative, Xpert Clostridioides difficile in stool: C. difficile toxigenic negative and 027 presumptive negative, Xpert MTB-RIFG4 in stool: MTB Negative, RIF Resistance: Not detected. Fecal Calprotectin: 75 ug/g. Serology for celiac disease was performed: ASCA, Anti-TG2 IgA, Anti-DPG IgA, EMA IgA, all with negative results. p-ANCA: Negative. Anti-transglutaminase IgA (CLIA): 3.3 U, Complement C3: 0.8 g/L (Reference Range: 0.9 - 1.8 g/L), Complement C4: 0.2 g/L (Reference Range: 1 - 4 g/L), profile of antibodies against extractable nuclear antigens: negative, Anti-dsDNA: 11.6 (Reference Range: $>$ 27), AntiSmith: 12.7 U/mL (Reference Range: $<$ 15), ANA: Negative. IgA: 260 mg/dL (Reference Range: 40-230), IgE: 44.7 mg/dL (Reference Range: 50-100), IgG: 600 mg/dL (Reference Range: 700-1600), IgM: 13.60 mg/dL (Reference Range: 40-230).

Imaging examinations: Abdominal computed tomography (CT) showed no abnormalities. Upper gastrointestinal endoscopy was unremarkable, and lower gastrointestinal endoscopy revealed Dispersed white spots with a 'snowflake' appearance at the level of the terminal ileum were observed (Figure 1). A biopsy was taken, and the report indicates dilation of vessels with a lymphatic appearance in the lamina propria, associated with a moderate amount of plasma cells and distortion of the villi: Intestinal Lymphangiectasia (Figure 2). A nuclear medicine study was conducted: a scintigram for the detection of intestinal protein loss revealed an abnormal concentration of the radiotracer in the left flank in intestinal projection in the late views, confirming intestinal protein loss (Figure 3).

Methodology:

The case presented involves a patient with a complex condition who was ultimately diagnosed with intestinal lymphangiectasia, a rare disease characterized by excessive loss of proteins through the lymphatic vessels of the small intestine. This disorder can lead to serious complications due to protein deficiency and the loss of other important blood components.

The diagnostic approach was meticulous, considering a variety of possible causes for the patient's symptoms, such as extrapulmonary tuberculosis, autoimmune diseases like Crohn's disease and systemic lupus erythematosus, as well as primary immunological disorders. The observation of characteristic lesions in the small intestine, resembling "snowflake-like flakes," during endoscopic evaluation was crucial in reaching the diagnosis.

Once the histopathological diagnosis of intestinal lymphangiectasia was established, it was necessary to confirm the abnormal protein loss at the intestinal level. Therefore, "99mTc-labeled Albumin Macroaggregate Scintigraphy" was performed, which not only confirmed the losses but also localized the sites of greatest leakage, mainly in the terminal ileum, where snowflake-like lesions were found.

Patient management focused on symptomatic treatment, as there is no specific therapy for this disease. A high-protein diet was implemented, and human albumin was administered to address protein deficiency. However, despite these efforts, the patient experienced progressive deterioration and developed infectious complications that contributed to a fatal outcome. [6]

It is crucial to highlight that intestinal lymphangiectasia is a disease with a variable but potentially severe prognosis that can limit the patient's life expectancy. Management focuses on relieving symptoms and pre-

venting complications, but it is not always effective in halting disease progression. In some cases, such as this one, a fatal outcome is unfortunately a possibility, especially when severe complications occur.[6]

CONCLUSION

This case highlights the atypical presentation of Waldmann's Disease in adulthood, emphasizing the importance of a multidisciplinary approach for accurate diagnosis and management. Further research is warranted to enhance our understanding of this uncommon disorder and its potential implications for patients with complex medical histories.

DISCUSSION

The rarity of Waldmann's Disease in adulthood and its association with other significant medical conditions pose diagnostic challenges. The distinct endoscopic and histological findings, coupled with scintigraphy results, contribute to a comprehensive understanding of this complex case. Currently, the sensitivity and negative predictive value of HSA scintigraphy labeled with 99m Tc make it superior to Alpha 1 antitrypsin clearance (AATC) in the diagnosis of protein-losing enteropathy (PLE). In view of the easy application, lack of adverse effects, wide availability and rapid results, We recommend 99m Tc-labeled HSA scintigraphy as a method initial diagnostic tool for patients with PLE. Finally, it is necessary to integrate clinical evaluation, endoscopic, histological and radiological characteristics, to make an accurate diagnosis of PLE. case[4,5]. Differential diagnoses and management considerations are discussed.

AUTHOR CONTRIBUTIONS

Alex Castellón Méndez: Main Author, Conceptualization; Data curation; Funding acquisition; Writing – original draft. **Allan Bodán Campbell:** Conceptualization; Investigation; Resources; Supervision. **Victor Rosales Obregón:** Conceptualization; Data curation; Investigation; Project administration; Resources; Writing – review & editing. **Mohammed Zahran:** Conceptualization; Methodology; Project administration; Resources; Supervision; Writing – review & editing.

FUNDING INFORMATION:

The authors of this article declare that no funding was obtained for the writing and preparation of this manuscript.

CONFLICT OF INTEREST STATEMENT:

The authors declare that they have no conflicts of interest with any organization regarding the article submitted for publication.

DATA AVAILABILITY STATEMENT:

We commit to ensuring the availability and confidentiality of the information related to the presented clinical case. Our priority is to safeguard patient privacy and adhere to the highest ethical standards in handling medical information. All clinical documentation will be protected and used solely for educational and academic discussion purposes.

ETHICS STATEMENT:

This involves the description of a clinical case. It is not a clinical trial, and no experimentation has been conducted on animals or humans. The authors of this manuscript have adhered to the protocols of our workplace (Manolo Morales Peralta Hospital) for the publication of clinical cases, and patient anonymity has been preserved.

CONSENT

Written informed consent was obtained from the patient and their family to publish this report in accordance with the journal's patient consent policy.

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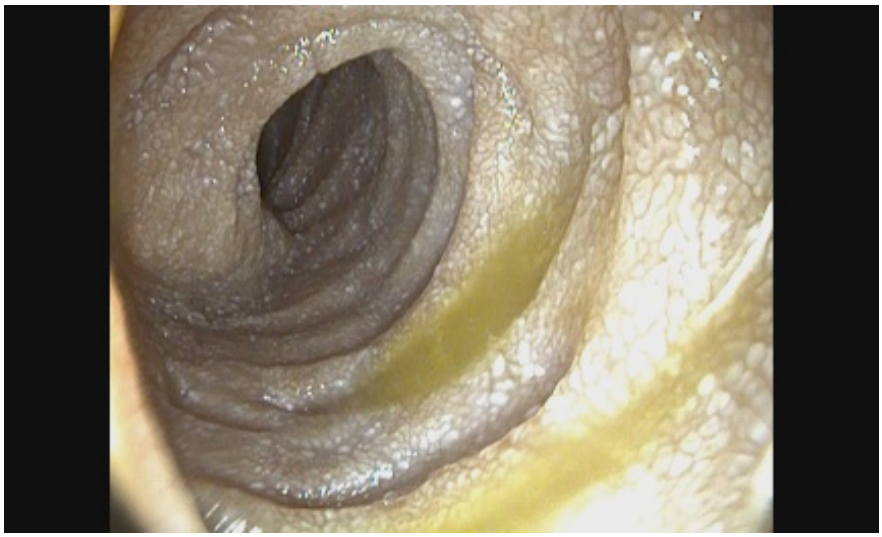

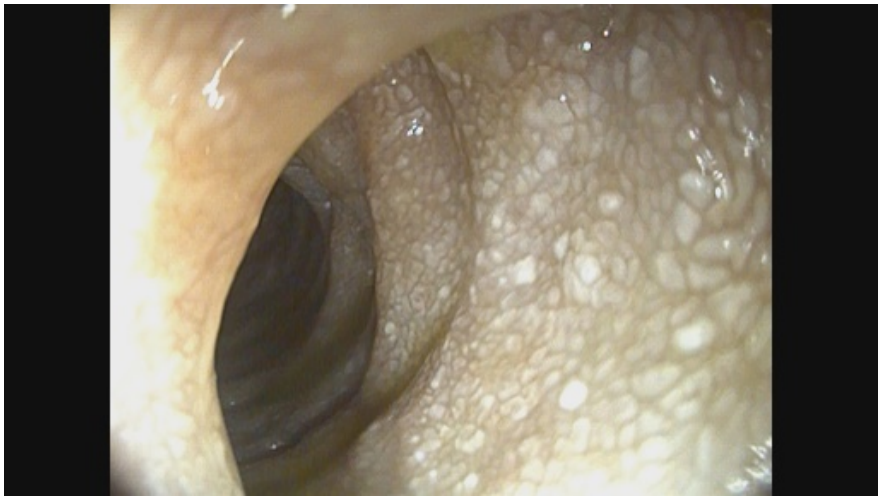

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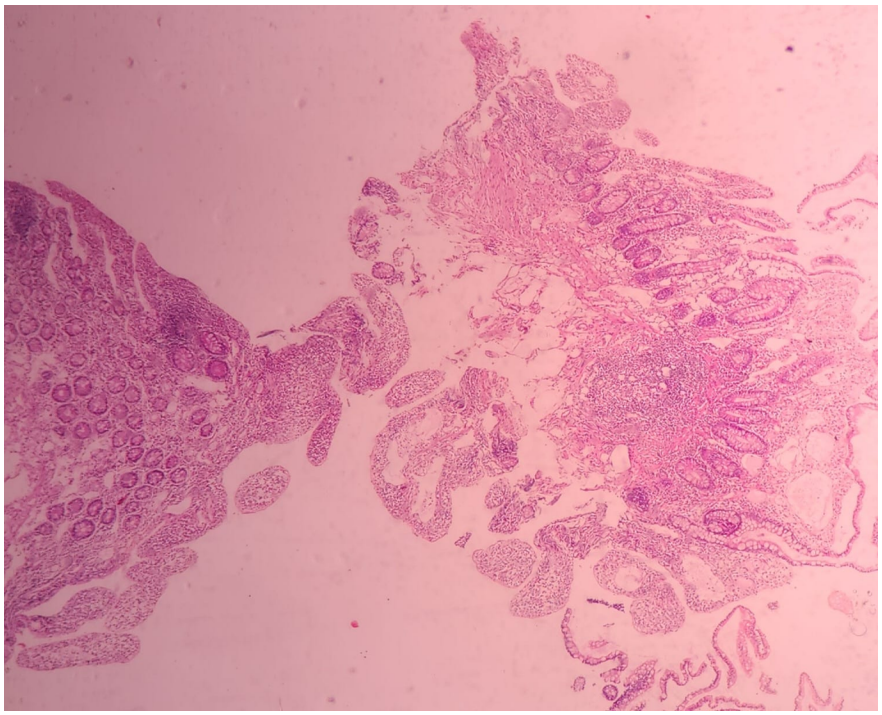
Figure 1. A and B) Mucosa of the second portion of the duodenum with scattered white spots resembling "snowflakes" at the level of the terminal ileum. Endoscopy Department, Manolo Morales Peralta Hospital, Managua, Nicaragua.



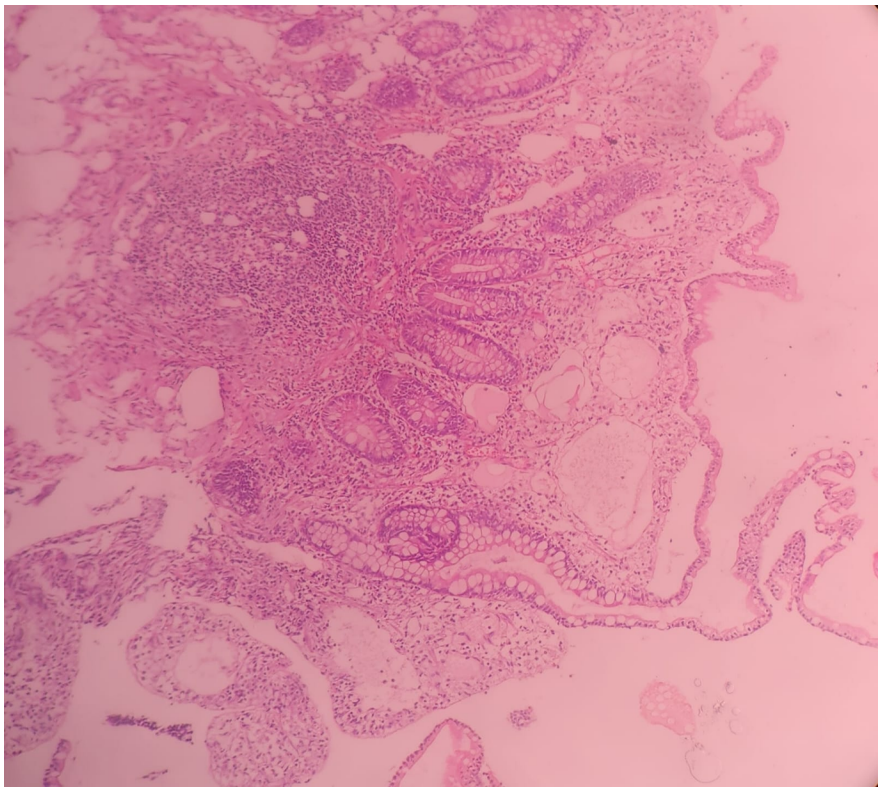


Figure 2. A) H&E 10x. Distorted intestinal villi. B) H&E 40x. Dilation of lymphatic vessels. Pathology Department, Manolo Morales Peralta Hospital - Q 5635-22. Managua, Nicaragua.

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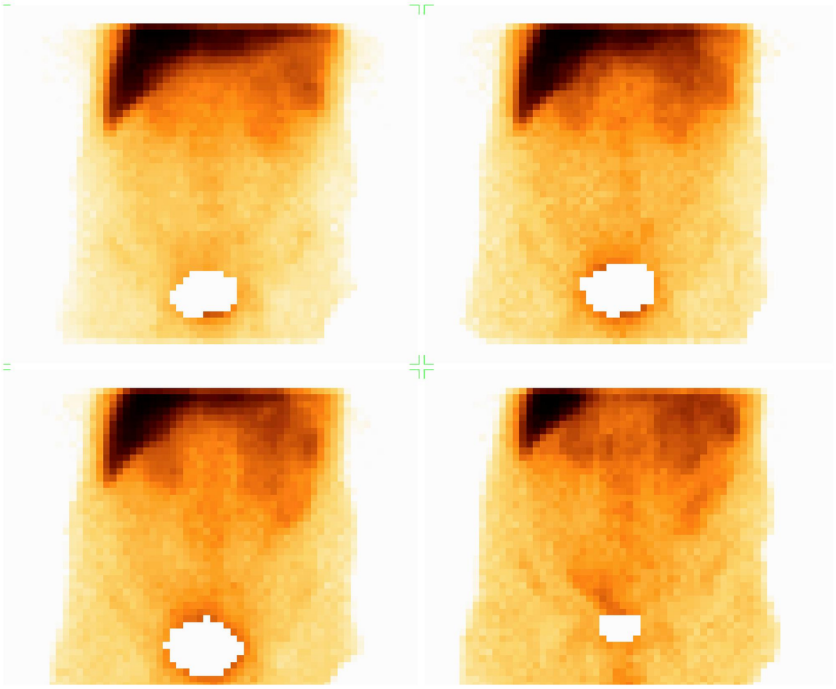

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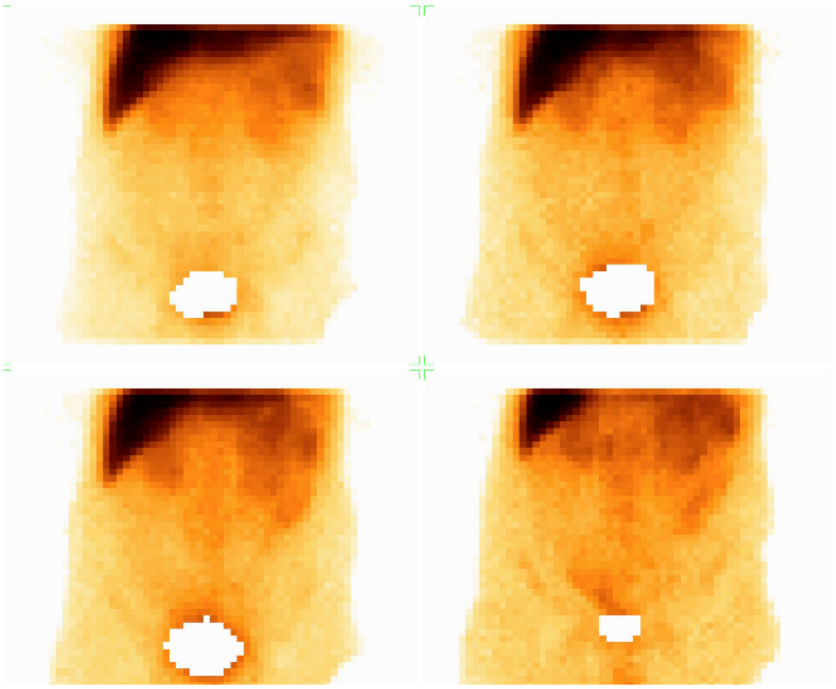

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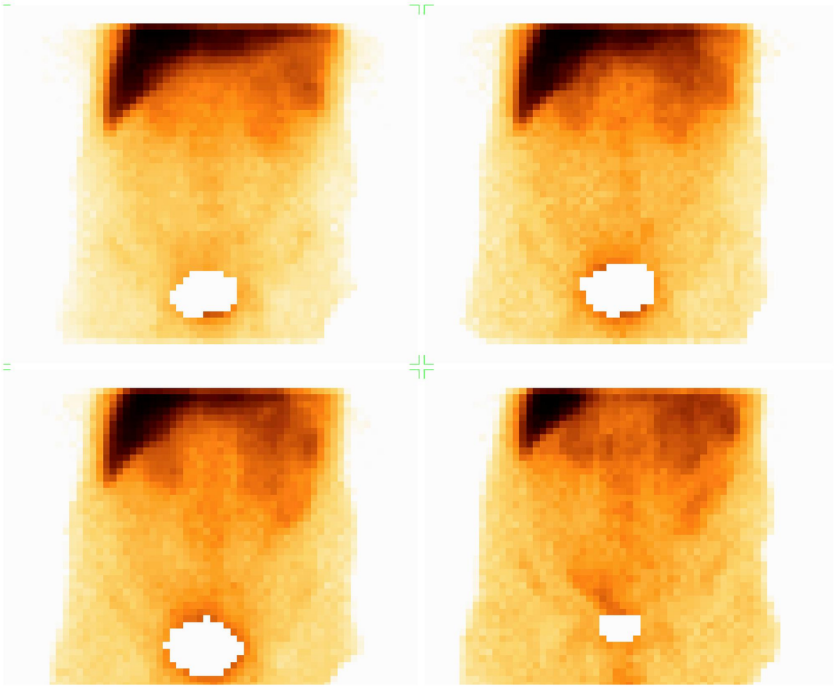

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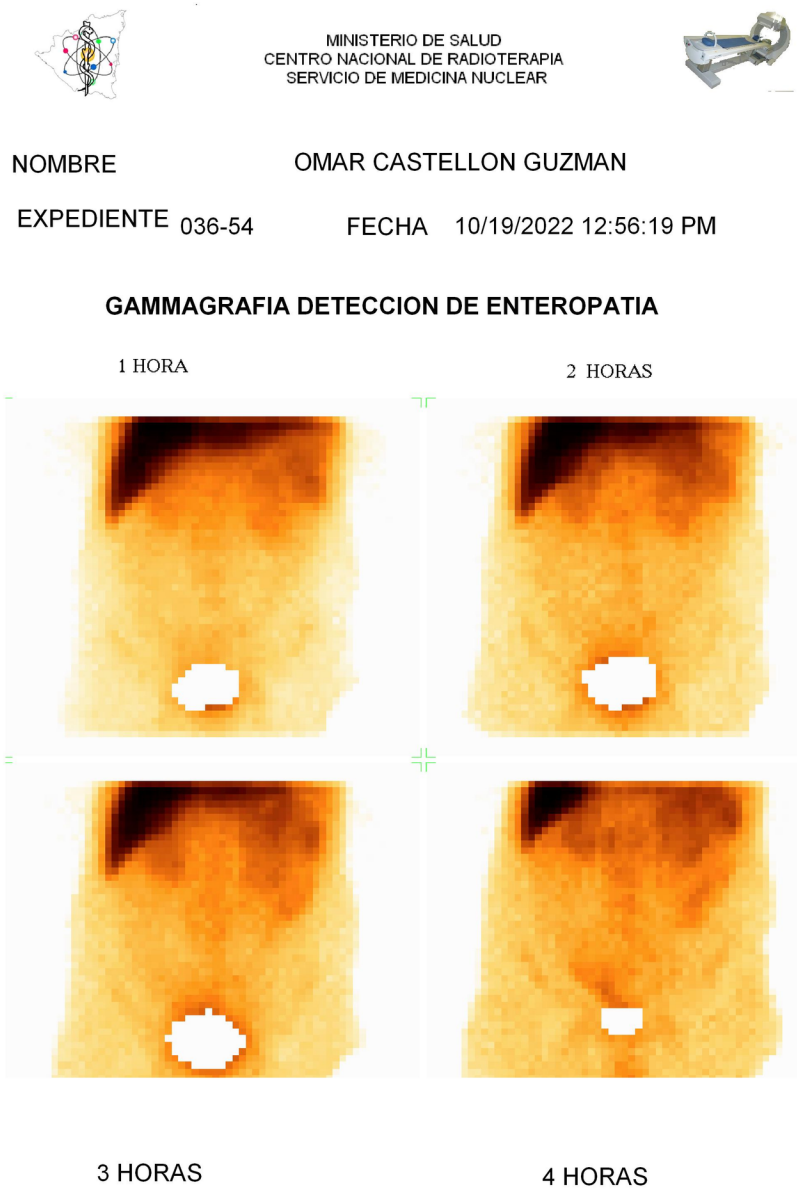

Figure 3. Scintigram with 99mTc-labeled albumin macroaggregate. A) Hour 1, early phase, physiological uptake in the liver and spleen. B) Hour 2. C) Hour 3. D) Hour 4, late phase, abnormal concentration of the radiotracer in the left flank in intestinal projection. Nuclear Medicine Department, National Center of Radiotherapy - Managua, Nicaragua.

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