

## Gastrointestinal Transit Scintigraphy in a Case of Syringomyelia

### Abstract

Syringomyelia is a rare degenerative disease affecting the spinal cord and brain stem causing progressive neurological dysfunction. The presence of gastrointestinal symptoms in these patients is common, although references related to nuclear medicine imaging procedures in this pathology are limited, focusing on the study of gastric emptying. We present a 47-year-old male patient diagnosed with syringomyelia and persistent digestive symptoms who underwent gastrointestinal transit scintigraphy to assess the extent of dysmotility. Liquid gastric emptying and small-bowel transit were normal. Large bowel showed poor activity in descending and rectosigmoid colon, being compatible with generalized slow colon transit.

**Keywords:** *Gastrointestinal transit, In-111 diethylenetriaminepentaacetic acid, scintigraphy, syringomyelia*

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We present a 47-year-old Caucasian male patient who began with nonirradiated pain in the dorsal spine and hypoesthesia. A magnetic resonance imaging (MRI) scan was performed showing a dorsal syringomyelic cavity [Figure 1]. The patient referred cervical whiplash 3 years ago due to a traffic accident. An electroneurography study revealed data of axonal sensitive polyneuropathy. Sural nerve biopsy showed axonal loss of small and large fibers, and analytical study of cerebrospinal fluid was normal. The patient received corticoid and immunoglobulin therapy with poor response.

A few months after diagnosis, the patient developed autonomous digestive symptoms, abdominal distension, and constipation. Gastroscopy revealed only a small hiatal hernia. Abdominal computed tomography scan and rectal biopsy were without pathological findings. Gastrointestinal transit scintigraphy was performed following International Guideline for evaluating dysmotility [Figure 2].<sup>[1]</sup> An oral dose of 37 MBq (1 mCi) of In-111 diethylenetriaminepentaacetic acid (DTPA) diluted in water was administered, along with the unlabeled standard solid meal. Serial abdominal planar images were

acquired until 6 h for gastric emptying and small-bowel transit using a dual-head  $\gamma$ -camera (anterior and posterior acquisition in a  $128 \times 128$  pixel matrix). Static images were subsequently acquired at 24, 48, and 72 h after administration of tracer for colonic transit study. Liquids gastric emptying and small bowel transit time were normal. Activity progressed through ascending and transverse large bowel, but poor activity was seen in descending and rectosigmoid colon. Six regions of interest were identified to quantify colonic transit. Colon geometric center was low and consistent with generalized slow colon transit time.

Syringomyelia is a rare and chronic degenerative disease affecting the spinal cord and brain stem. It is characterized by the formation of a cystic cavity that can produce compression of nerve fibers.<sup>[2]</sup> The loss of sensitivity is the first symptom to appear due to the involvement of spinothalamic fibers in the anterior commissure.<sup>[3]</sup> The term, derived from an ancient Greek word, means flute. The prevalence in Western countries is 8.4/100,000, with slight female sex predominance. Diagnosis is usually made by MRI, where most lesions are located at the cervical and thoracic spine. Syringomyelia could be congenital (Chiari malformation) or acquired after disturbance of cerebrospinal fluid circulation due to infection, inflammation, trauma, or neoplasia.<sup>[4]</sup>

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Figure 1: Magnetic resonance imaging scan. sagittal views in T2-enhanced sequences demonstrated a dorsal syringomyelic cavity from levels D4 to D8 (white arrows)

Symptoms of gastrointestinal involvement are frequent in patients with syringomyelia. References related to nuclear medicine imaging procedures in this pathology are rare, focusing on the study of gastric emptying.<sup>[5,6]</sup> However, there are no references to its use in patients diagnosed with this medullary pathology. The scintigraphy patterns are easily recognizable, can be evaluated quantitatively, and help to determine appropriate therapeutic strategy.<sup>[7]</sup> The described case illustrates the usefulness of In-111 DTPA scintigraphy to evaluate the type and the degree of the affected gastrointestinal tract in patients with syringomyelia.<sup>[8]</sup>

#### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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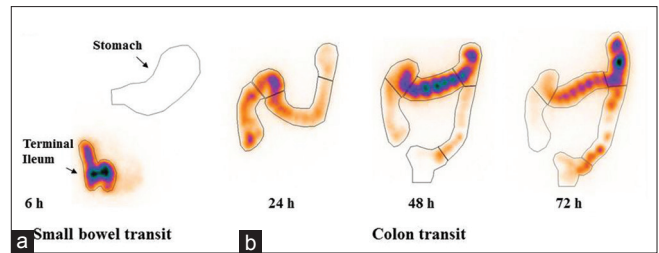


Figure 2: Gastrointestinal transit scintigraphy. Static image at 6 h (a) showed normal small bowel transit time (more than 40% of total abdominal counts progressed into the terminal ileum or colon). Only anterior static images are shown. Static images at 24, 48, and 72 h (b). Activity progressed through ascending and transverse large bowel but poor activity was seen in descending and rectosigmoid colon

#### Conflicts of interest

There are no conflicts of interest.

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