

## DYNAMICAL GASTROSCINTIGRAPHY WITH SEMI-SOLID FOOD FOR EARLY DIAGNOSIS OF DISORDERS IN STOMACH MOTILITY

**B. Chaushev, A. Klisarova**

*Department of Imaging Diagnostics and Radiotherapy, Medical University, Varna, Laboratory of Nuclear Medicine, "St Marina" Hospital, Varna*

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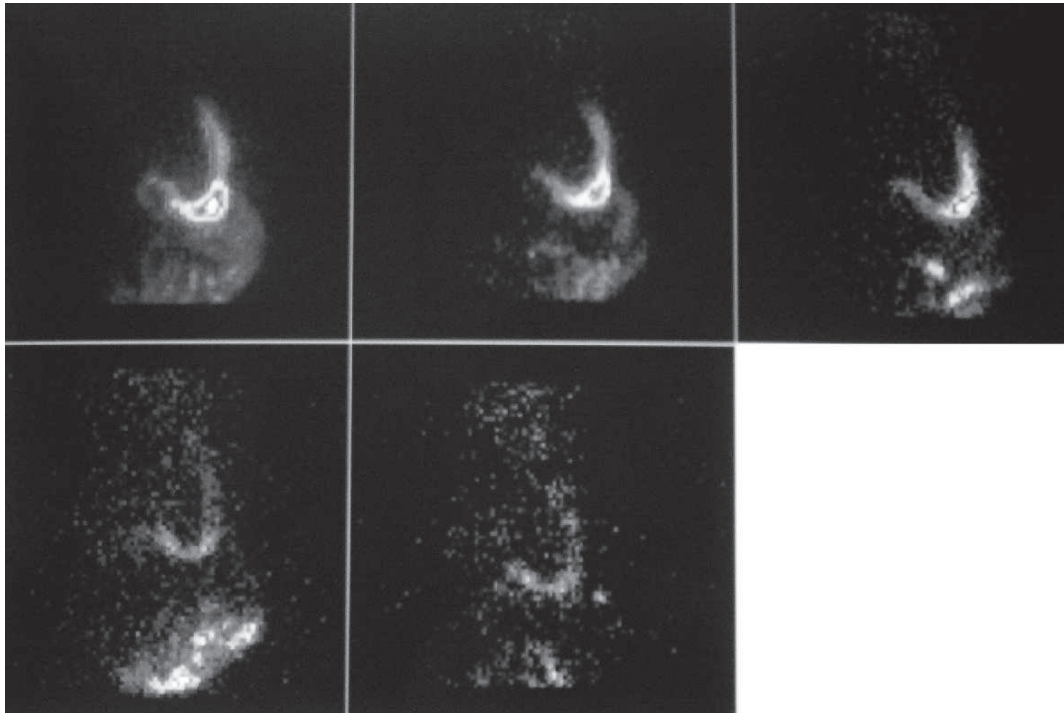
### ABSTRACT

**Basic disturbance in stomach gastroparesis is impaired neuronal control of normal gastric emptying and "fueling" to the next phase of gastrointestinal tract. Nuclear medicine investigation allows in noninvasive way to evaluate the motility function of gastrointestinal tract.**

**Keywords:** Dynamic gastroscintigraphy, Gastric emptying, Semi-solid food

Motility disorders of the stomach are met very often in patients with different pathology: diabetes mellitus, mixedema and Parkinson's disease.

examination, B. Blood test- Complete blood count, Complete metabolic profile, including glucose, potassium, creatine, total protein, albumin, calcium



*Fig.1 Patient with normal gastric emptying*

Evaluation of Patients Suspected to Have Gastroparesis

1. Initial investigation, A. History and physical

#### Address for correspondence:

*B. Chaushev, Dept. of Imaging Diagnostics and Radiotherapy, Medical University Prof. Dr. Paraskev Stoyanov, 55 Marin Drinov St., BG-9002, BULGARIA*

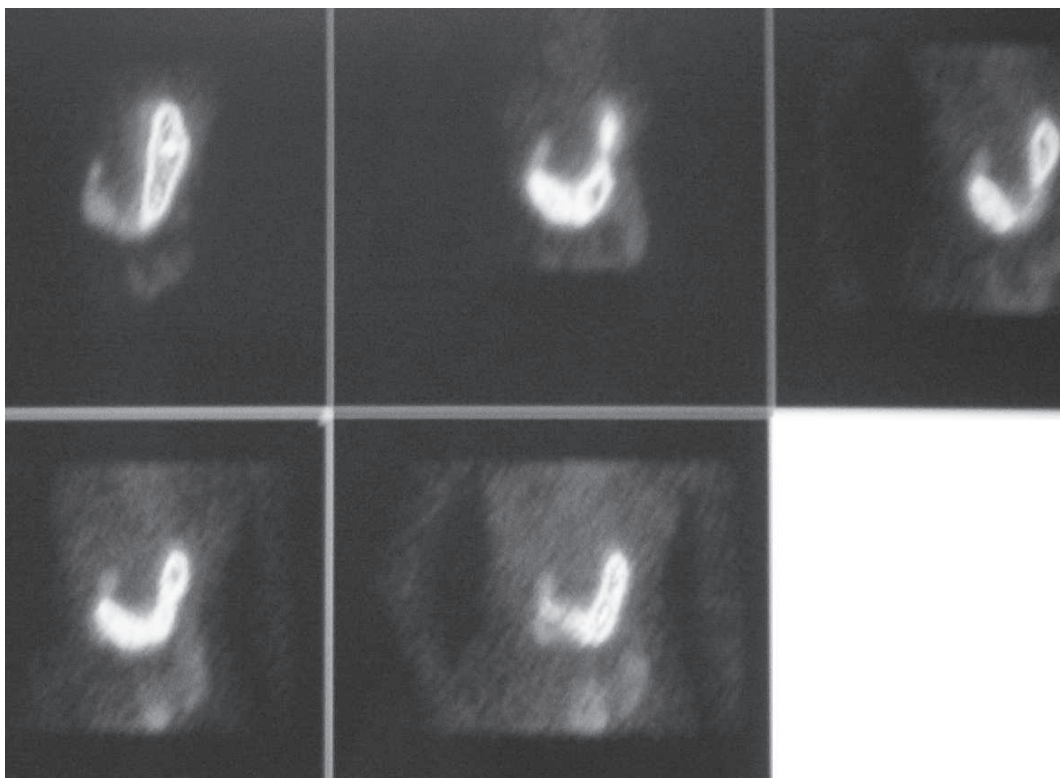
Amylase, if abdominal pain is significant symptom, Pregnancy test, if appropriate, C. Abdominal obstruction series, if vomiting or pain is acute or severe.  
2. Evaluate for organic disorders, A. Upper endoscopy to evaluate for mechanical obstruction or lesions (alternative: barium upper gastrointestinal series, often with small bowel follow-through), B. Biliary

- ultrasonography if abdominal pain is a significant symptom.
- Evaluate for delayed gastric emptying. A. Solid-phase gastric emptying test, B. Screen for secondary causes of gastroparesis-Thyroid function test (thyroid stimulating hormone), Rheumatologic serologies(eg. Antinuclear antibody, scleroderma antibody (Scl70).
  - Treatment treat with prokinetic agent and/or antiemetic agent.
  - If no clinical response, consider further investigation, A. EKG, B. Antroduodenal manometry, C. Small bowel follow-through, D. Further laboratory test.

Dynamic gastroscintigraphy is carried out in the morning after evening fast, with 8 to 12 hours abstinence of tobacco, drinks and medication influencing motility function. The patient takes breakfast consisting semi-solid food (muesli 50g mixed in 150 ml water), labeled with 1 mCi / 37 MBq / Tc-99m SC. Patient is in supine position and the detector centered to display the whole stomach. The protocol is started 15 seconds after oral intake of radiopharmaceutic and semi-solid food. (2)

The first image is received in 0 minute and the next ones are received in 30 minutes interval during two hours or until stomach evacuation goes above 50%.

The time needed for semi-emptying of stomach is deter-



*Fig.2 Patient with delayed gastric emptying*

Nuclear medicine investigation allows in noninvasive way to evaluate the motility function of gastrointestinal tract. Despite the advantages of x-ray examinations, endoscopy and manometry, dynamic gastroscintigraphy remains basic standard for assessing stomach evacuation due to physiological likelihood and ability to semi-quantitative analysis of received information and doesn't need large financial investment and leads to early diagnosis of the disease and its effective treatment. (1)

The test is carried out with an apparatus - gammacamera with rotating head, equipped with collimator with low energy with high resolution.

The radiopharmaceutic used is Sulfur Colloid (SC), labeled with Tc-99m in 1 mCi activity.

Parameters of the protocol include: 5 frames, 0, 30, 60, 90, 120 min., 60 seconds for the frame, matrix 128 x 128, unexpanded image, and low energy collimator with high resolution.

mined from all receive images. We are drawing region of interest, which includes the whole stomach from all projection. Generating time-activity curve that reflects the movement of radioactivity in the region of interest and the time for emptying the stomach, in normal range  $\frac{1}{2}$  from beginning activity to 60 minutes. fig.1, fig.2 (3,4)

Within the stationary investigation and treatment, the dynamic gastroscintigraphy can be part of complex test of patients with diabetes with regard to establishing diabetes gastropathes.

The advantage of using semi-solid food gives ability to detect minimal changes in stomach emptying.

## CONCLUSION

The method makes possible the precise objective measurement semi-quantitative assessment the speed of gastric emptying.

The method is non - invasive with insignificant harmless radiation for the patient, easy performed and cost effective.

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