SCINTIGRAPHIC EVALUATION OF GASTRIC EMPTYING

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in
RADIODIAGNOSIS

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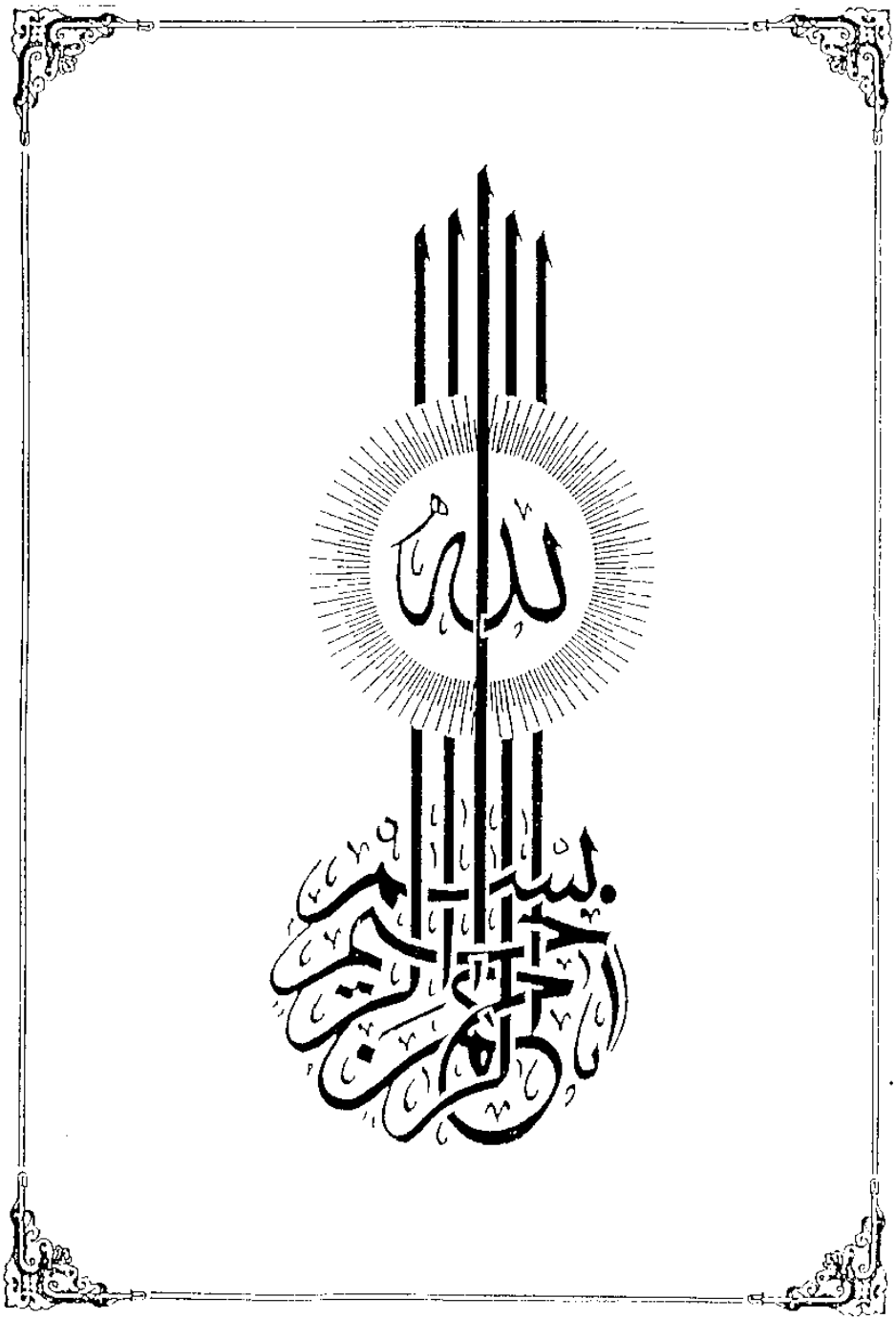

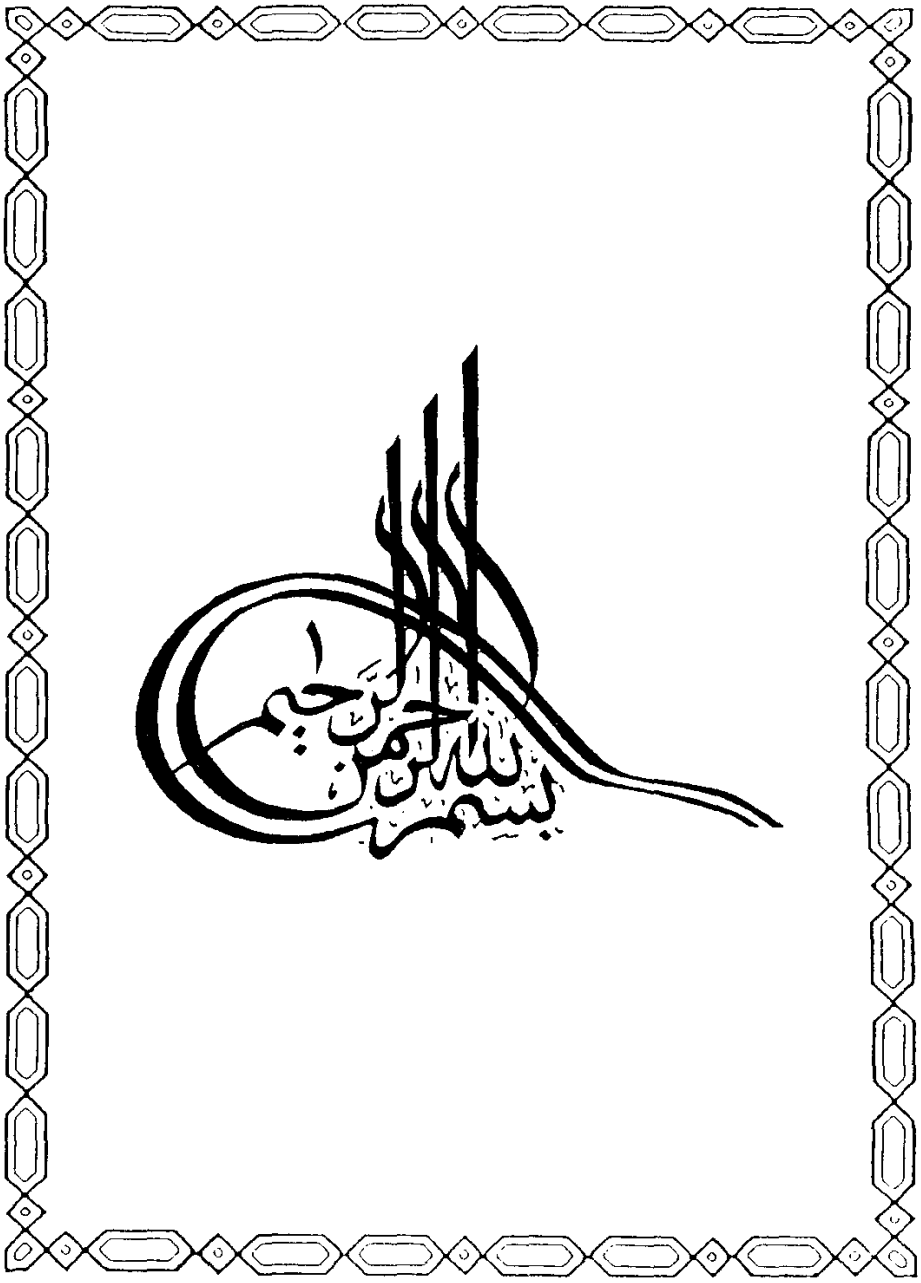

To...

the most wonderful parents...

..

To...

my beloved husband...

Marwa

ACKNOWLEDGMENT

To the Almighty God, to Him, whose knowledge is beyond all knowledge.

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INDEX

INTRODUCTION AND AIM OF THE WORK

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During the previous century and a half, a number of techniques for measuring gastric emptying had been introduced *(Malmud et al, 1982)*.

The emptying of the stomach is achieved by peristaltic waves which begin in the lower body and push food towards the pylorus *(Maisey et al, 1991)*.

Among the several tests used, there are intubation methods, radiographic procedures, ultrasonographic and radionuclide techniques:

- Intubation technique is uncomfortable and the question of whether or not it affects motor function is still a subject of controversy.
- Radiographic procedures using barium sulphate is non-physiological and not quantitative.
- Recently ultrasonography has been used to assess gastric motility but it does not permit accurate measurement of the rate of gastric contents emptying.
- Radionuclide techniques are non-invasive measurement of gastric emptying rate of physiological meals. They can be employed to assess the solid phase, liquid phase or both sorts of meals.

(Elashoff et al, 1982; Grainger and Allison, 1992).

When first introduced in 1966, scintigraphic methods were realized as simple tests that can quantitate the rate of gastric emptying *(Maisey et al, 1991)*.

Present technology suggests that one of the following techniques is optimal for routine clinical studies:

1. **Combined liquid-solid meal test:** this technique permits simultaneous determination of the rate of liquid and solid gastric emptying, employing in vivo labeled solid meal and labeled lquid component. This method, however, requires the use of two radionuclides of different energies *(Malmud et al, 1982)*.
2. **Alternate solid-liquid meal test:** this method allows the study of the liquid and solid meals emptying, using a single isotope, after the universally available and cheap Tc-99m. However, both tests should be performed on two separate days.
3. **Either the solid or liquid meal emptying rate:** it could be assessed using Tc-99m (one day test). Often, the solid meal is chosen unless there is clinical interest in prefering the assessment of liquid rather than solid meal emptying time.

Different types of solid and liquid meals have been suggested by various investigators. For instance, radioactive chicken liver, boiled eggs, pancake and corn flakes have been employed as solid meals; while orange juice, milk, physiological saline or even water have been used to assess the liquid phase.

Accordingly, the aim of this work is to review and discuss the various scintigraphic techniques employed to assess the rate of gastric emptying in the light of other existing techniques.