

Factors associated with delayed gastric motility, a retrospective case-control study

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Introduction

- Gastrointestinal motility is regulated by peristalsis and segmentation.
- Peristaltic regulation is mainly by hormones and the autonomic nervous system.
- The current literature does not provide data on different pathological diseases that may affect motility.
- We aim to do a retrospective study to correlate different factors that may delay gastric motility.

Methods

- Retrospective review of the Nuclear Medicine procedure database
- Patients having Gastric Emptying Study (GES) between 2011 and 2020 were included.
- The research protocol was approved by the Institutional Board Review of the MedStar Washington Hospital Center.
- The p-values are for comparison of demographic and laboratory characteristics between the study groups.

Cont.

- Patients included if GES was performed and have laboratory data available within six weeks of the index study.
- Exclusion criteria were duplicate studies, failure to complete gastric emptying study, patients on medications known to affect gastric function, and previous gastric surgery.

Results

- 1205 GES was done between 2011 and 2020.
- 455 fit our inclusion criteria.
- 73 patients had delayed gastric emptying, while 334 patients had normal gastric emptying studies.
- The mean age for the delayed group was 51.7 years old, without a significant difference from normal gastric emptying ($p=0.268$).
- Females represent 47 patients (15.5%), while males represent 26 patients (17.2%), with no significant difference between the study group ($P=0.26$).

cont.

- The delayed emptying group has a higher rate of chronic kidney disease at 17.8% ($P=0.004$) and diabetes at 45.8% ($P=0.001$) in comparison with 7.46% and 24.8% consecutively.
- Other comorbidities such as infections around the time of the study, cirrhosis, and hypothyroidism did not reach statistical significance.
- On laboratory values, magnesium and glucose were significantly higher in the delayed emptying group ($P<0.001$).
- Other laboratory findings as T4, hemoglobin A1c, phosphorus, albumin, and creatinine level were not significant

| | Normal | | | Delayed | | | p-value |
|----------------|--------|--------|------|---------|--------|------|---------|
| | N | % | | N | % | | |
| Sex | | | | | | | 0.268 |
| Male | 97 | 64.24% | | 26 | 17.22% | | |
| Female | 237 | 78.48% | | 47 | 15.56% | | |
| Infection | 4 | 80.00% | | 1 | 20.00% | | 0.84 |
| Hypothyroidism | 15 | 4.48% | | 3 | 4.11% | | 0.386 |
| CKD | 25 | 7.46% | | 13 | 17.81% | | 0.004 |
| Diabetes | 83 | 24.78% | | 40 | 54.79% | | <0.001 |
| Insulin | 23 | 6.87% | | 13 | 17.81% | | 0.019 |
| | Median | p25 | p75 | Median | p25 | p75 | |
| age | 52 | 35 | 63 | 54 | 45 | 61 | 0.689 |
| t4 | 1.075 | 0.885 | 1.37 | 1.05 | 0.97 | 1.07 | 0.506 |
| magnesium | 1.6 | 1.4 | 2 | 2.1 | 1.9 | 2.2 | <0.001 |
| gluc | 106 | 88 | 133 | 176 | 123 | 238 | <0.001 |
| CA | 8.8 | 8.4 | 9.2 | 8.5 | 8.1 | 9 | 0.151 |
| a1c | 6.7 | 6.2 | 8.5 | 7.7 | 6.1 | 10.9 | 0.436 |
| phosphorous | 3.6 | 3.2 | 4.25 | 4.2 | 3.3 | 5.9 | 0.178 |
| alb | 3.5 | 3 | 3.9 | 3.3 | 2.8 | 3.7 | 0.197 |
| K | 4.1 | 3.8 | 4.4 | 4.15 | 3.7 | 4.4 | 0.946 |
| Cr | 0.95 | 0.775 | 1.64 | 1 | 0.77 | 2.1 | 0.584 |

Table 1: Baseline Characteristics of patients with delayed gastric emptying in comparison with normal gastric emptying patients.

Conclusion

Chronic kidney disease patients have a higher tendency to delayed gastric emptying.
Insulin users, high magnesium, and glucose delayed gastric emptying.