The Prevalence of Co-Morbidities Associated with Median Arcuate Ligament Syndrome

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Abstract
Median Arcuate Ligament Syndrome (MALS) is a rare disorder that occurs when the celiac artery and adjacent nerves are compressed by the median arcuate ligament. Symptoms of MALS can include significant postprandial abdominal pain, weight loss, nausea, and vomiting. It has been suggested that other co-morbid conditions may be associated with MALS [1-2]. However, there has only been one study of 11 patients looking at multiple co-morbidities [3]. In that study, 71.4% of patients had radiographic evidence of delayed gastric emptying, 18.2% had Ehlers-Danlos Syndrome (EDS), and 27.3% had Postural Orthostatic Tachycardia Syndrome (POTS), all of which are higher than the prevalence of these conditions in the general population. Another study of 51 patients diagnosed with MALS showed that 28% met the criteria for a psychiatric diagnosis [4].

We conducted a survey of individuals with MALS for self-reporting co-morbid conditions. 242 patients who self-identified as having MALS were surveyed. 52.7% of patients had a diagnosis of dysautonomia. Of those patients, 71.2% reported a diagnosis of POTS. EDS was reported in 31.7% of patients. Gastroparesis was reported in 71.4% of patients in the previous small study (3). Increased prevalence of all three of these diagnoses may have a higher prevalence in MALS patients than in the general population. MCAS, SIBO and autoimmune conditions have not been previously studied in MALS patients, and thus we present the first association of these conditions with MALS. MCAS, SIBO and autoimmune conditions may be associated with MALS (1, 2), however there has only been one study of 11 patients looking at multiple co-morbidities (3). In that study, 71.4% of patients had radiographic evidence of delayed gastric emptying, 18.2% had Ehlers-Danlos Syndrome (EDS), and 27.3% had Postural Orthostatic Tachycardia Syndrome (POTS), all of which are higher than the prevalence of these conditions in the general population. Another study of 51 patients diagnosed with MALS showed that 28% met the criteria for a psychiatric diagnosis (4).

The incidence of MALS in the population is predicted to be 2 cases per 100,000 patients, thus other possible co-morbidities may be associated with MALS and a diagnosed dysautonomia (52.7%) who had MALS and a diagnosed dysautonomia (52.7%). Gender Number of Patients Percent of Patients

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<tr>
<th>Gender</th>
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<tbody>
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<td>Male</td>
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<td>50%</td>
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<tr>
<td>Female</td>
<td>122</td>
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What type of dysautonomia do MALS patients report?

What type of autoimmune condition(s) do MALS patients report?

What type of Ehlers-Danlos Syndrome (EDS) do MALS patients report?

Results

What is the prevalence of the co-morbidities evaluated?

Introduction

The goal of this study was to determine the prevalence of co-morbid conditions associated with Median Arcuate Ligament Syndrome (MALS). Previous studies have looked at relatively small sample sizes with a limited number of studied co-morbid conditions. Our goal was to survey a larger population of MALS patients and 29.6% admitted to depression. Autoimmune conditions were reported in 37.0% of patients, and 27.4%

Objective

The incidence of MALS in the population is predicted to be 2 cases per 100,000 patients, thus other possible co-morbidities may be associated with MALS (52.7%).

Study Design

Patients diagnosed with MALS were identified via three Facebook support groups and consent for posting the survey link was obtained via communication with the page administrators. The survey was posted on all 3 pages allowing for all pages to view the survey. The number of Facebook members in each group is 1,800, 4,400, and 2,700.

Inclusion criteria: Individuals must have been 18 years or older at the time of the survey and have a diagnosis of Median Arcuate Ligament Syndrome (Celiac Artery Compression Syndrome) diagnosed by a medical provider (MD/DO, PA, NP) at any time in the individual’s life prior to completion of the survey. Exclusion criteria: Individuals who do not meet the inclusion criteria; those who had not been diagnosed with Median Arcuate Ligament Syndrome (Celiac Artery Compression Syndrome) by a medical provider at any time in the individual's life prior to completion of the survey or were not 18 years or older.

Discussion

• Our sample size of 242 is much larger than previous studies that included 11 and 51 MALS patients while looking at co-morbid conditions (4).
• Our study employed self-identification of patients with a MALS patient instead of using retrospective chart review.
• The prevalence of all co-morbid conditions including Dysautonomia, Ehlers-Danlos Syndrome (EDS), gastroparesis, MCAS and autoimmune conditions have not been previously studied in MALS patients, and thus we present the first association of these conditions with MALS. MCAS, SIBO and autoimmune conditions may be associated with MALS (1, 2), however there has only been one study of 11 patients looking at multiple co-morbidities (3). In that study, 71.4% of patients had radiographic evidence of delayed gastric emptying, 18.2% had Ehlers-Danlos Syndrome (EDS), and 27.3% had Postural Orthostatic Tachycardia Syndrome (POTS), all of which are higher than the prevalence of these conditions in the general population. Another study of 51 patients diagnosed with MALS showed that 28% met the criteria for a psychiatric diagnosis.

Conclusion

Median Arcuate Ligament Syndrome (MALS) is a condition characterized by significant post-prandial abdominal pain, weight loss, nausea, and vomiting. MALS has been proposed to be associated with many co-morbid conditions in a few small studies [4]. We found an increased prevalence of Dysautonomia, Ehlers-Danlos Syndrome, Mast Cell Activation Syndrome, Small Intestinal Bacterial Overgrowth, psychiatric conditions and autoimmune conditions with patients with MALS. This data will help providers and patients better understand the prevalence of other conditions. This study may also decrease suffering and the time to diagnosis of MALS patients if other co-morbidities are recognized in patients. Further research into the prevalence of MALS symptoms in those who carry diagnoses of co-morbid conditions is needed to further explore this possible implication.

References
5. International journal of surgery case reports

Acknowledgements

Approval for this study was obtained by the institutional review board at Western University of Health Sciences. The survey was posted on all 3 Facebook pages.

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