**Introduction**

- Vitamin D Deficiency has been proven to play an underlying role in multiple known disease states with symptoms ranging from fatigue and weakness to depression and cognitive impairment.
- In Emergency Department (ED) patients presenting with generalized, non-specific complaints/symptoms, vitamin D levels are not regularly evaluated.

**Hypothesis**

- We hypothesize that there is an underlying association between diagnosed vitamin D deficiency and generalized chief complaints in ED patients with multiple repeat ED visits for the same complaints.

**Materials and Methods**

- This study was a retrospective chart review including patients presenting to the ED who were billed for three specific ICD.10 codes.
- This study was approved by the Brody School of Medicine IRB.
- 50 random charts were selected using E55.9 (Vitamin D deficiency, unspecified), F41.9 (Anxiety Disorder, unspecified), and R52 (Pain, unspecified).
- The following data was collected from each chart:
  - Chief Complaint
  - Labs/Procedures ordered during ED stay (how many and type)
  - Duration of ED visit
  - Previous vitamin D deficiency
  - Readmission into ED for same issue within 12 months prior to encounter of interest.

**Results**

- **Repeat ED visits across sample patient populations**: 52% of anxiety patients had repeat ED visits (F41.9), 80% of pain patients had repeat ED visits (R52), 36% of vitamin D deficient patients had repeat ED visits (E55.9).
- **Vitamin D deficient patients and psychiatric complaints**: All patients with a known vitamin D deficiency who presented with generalized psychiatric complaints had at least 1 previous visit for the same complaint, showing a significant association between a complaint of psychiatric nature and repeat ED visits (p=0.02).
- **Vitamin D deficiency and repeat ED visits**: Across all diagnoses, 30 patients had a known vitamin D deficiency and 37% (11) of those had previous ED visits for the same complaint, indicating a significant association between having repeat visit for the same generalized complaint and vitamin D deficiency (chi square p = 0.04).

**Chief complaints of Diagnosed Vitamin D Deficient Patients**

<table>
<thead>
<tr>
<th>Generalized Chief complaint</th>
<th>Number of Vitamin D Deficient Patients Presenting with Complaint in ED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Injuries</td>
<td>2</td>
</tr>
<tr>
<td>Psychiatric Complaints</td>
<td>4</td>
</tr>
<tr>
<td>Pain complaints</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>3</td>
</tr>
</tbody>
</table>

**A)** Percentage of vitamin D deficient and anxiety patients returning to the ED for the same generalized complaint.

**B)** Median number of tests ordered for vitamin D deficient patients (range: 5-22) and anxiety patients (range: 0-15)

**Conclusion**

- Vitamin D deficient patients appear to have less focused evaluations with more labs ordered.
- Patients presenting with generalized complaints without a previous diagnosis of vitamin D deficiency return to the ED more frequently than patients with a known vitamin D deficiency.
- Not having a previous diagnosis associated with generalized complaint may lead to increased testing.
- Testing for vitamin D early in patients with vague complaints may identify an underlying source of the problem allowing for corrective intervention and a reduction of repeat visits for the same generalized complaints.
- Future prospective studies will attempt to uncover an association that could explain certain generalized complaints that lead patients to repeatedly visit the ED and can also be utilized to identify a simple intervention that may effectively treat these chronic symptoms.

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