Determining the frequency of Plummer Vinson syndrome among patients having dysphagia presenting at district Bahawalpur

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ABSTRACT

BACKGROUND & OBJECTIVE: Plummer Vinson syndrome (PVS) is a rare triad of dysphagia, iron deficiency, and esophageal webs. This study aims to assess the frequency of PVS in patients presenting with dysphagia.

METHODOLOGY: A cross-sectional study was conducted at the Department of Otolaryngology from 1st April 2020 to 31st March 2021. A total of 164 patients having dysphagia for a minimum of two weeks duration were enrolled. The patient's data was recorded using a pre-designed questionnaire for PVS assessments, complete blood count, serum ferritin levels and barium swallow test results were obtained, and a radiologist was consulted for the upper esophageal web.

RESULTS: The observed frequency of PVS among patients with dysphagia was 11(6.7%). Female gender turned out to be significantly associated with PVS occurrence (p=0.001), while age (p=0.748) and duration of dysphagia (p=1.00) showed no significant association with it. Among those with PVS, 72.7% of patients were >40 years of age, 90.9% were females, and 81.8% had a duration of dysphagia >4 weeks.

CONCLUSION: It is concluded that PVS is not very frequent among patients with dysphagia. But since it increases the risk of squamous cell carcinoma of the pharynx and the esophagus, therefore, such patients should be followed closely for the presence of PVS and treated promptly to avoid morbidity and mortality.

KEYWORDS: Plummer Vinson Syndrome, Dysphagia, Iron Deficiencies, Anemia.
blood count and serum ferritin levels need to be monitored at 6 monthly intervals. The PVS patients having dysphagia may need repeated dilatations for management [17,18]. This study was designed to evaluate the frequency of PVS among patients with dysphagia in District Bahawalpur. Moreover, this study will help in early diagnosis and management of the disease in order to minimize the chances of malignant progression.

**METHODOLOGY**

This cross-sectional study was conducted at the Department of Otolaryngology, Bahawal Victoria Hospital, Bahawalpur, from 1st April 2020 to 31st March 2021. Adopting a non-probability consecutive sampling method, a total of 164 male and female patients with dysphagia (for a minimum of 2 weeks duration) and more than 15 years of age were enrolled after obtaining written informed consent. While, patients with neurogenic dysphagia, malignancy of the oropharynx, hypopharynx, and esophagus were excluded from the study sample. The study was ethically approved by the ethical review committee of Quaid-e-Azam Medical College (Reference no. 280/DME/QAMC Bahawalpur; Date 2nd March 2020). A predesigned proforma was used to record the study data, including patient age, gender and duration of dysphagia. All the enrolled patients were admitted to ENT Unit for PVS assessments, and clinical examination was carried out. Complete blood count, serum ferritin levels and barium swallow test results were obtained, and a radiologist was consulted for the upper esophageal web. In PVS-diagnosed cases, iron therapy was started immediately.

Data was statistically analyzed on SPSS version 20.0, the quantitative variables like age and duration of dysphagia were represented as mean and standard deviation. While frequency and percentages were used to present categorical variables like age group, gender and frequency of PVS. Post-stratification Fisher’s exact test was used to compare study variables, where p-value<0.05 was considered statistically significant.

**RESULTS**

The mean age of the enrolled patients was noted to be 43.83 ±3.30 years. Out of the total 164 patients, the majority were males (57.3%). Furthermore, the mean duration of dysphagia was 4.62 ± 1.18 weeks; most patients had a prolonged duration of dysphagia, i.e. 125(76.2%) of patients had a duration of more than 4 weeks (Table-I). Only 6.7% patients with dysphagia had Plummer Vinson Syndrome while 93.3% did not. There was no significant difference in the age (p=0.748) and duration of dysphagia (p=1.00) among the patients with or without PVS. The female gender turned out to be significantly associated with PVS frequency (p=0.001).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>n(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (Years)</td>
<td>15-30 years</td>
<td>8(4.9)</td>
</tr>
<tr>
<td></td>
<td>31-40 years</td>
<td>52(31.7)</td>
</tr>
<tr>
<td></td>
<td>&gt;40 years</td>
<td>104(63.4)</td>
</tr>
<tr>
<td>Duration of Dysphagia</td>
<td>2-4 weeks</td>
<td>39(23.8)</td>
</tr>
<tr>
<td></td>
<td>&gt;4 weeks</td>
<td>125(76.2)</td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>94(57.3)</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>70(42.7)</td>
</tr>
<tr>
<td>Frequency of PVS</td>
<td>Present</td>
<td>11(6.7)</td>
</tr>
<tr>
<td></td>
<td>Absent</td>
<td>153(93.3)</td>
</tr>
</tbody>
</table>

Plummer Vinson Syndrome is less frequently reported due to better nutritional outcomes, but it still remains a challenge among developing countries like Pakistan due to nutritional deficiencies and restricted healthcare facilities. Therefore, the present study aimed to assess the frequency of PVS among patients presenting with dysphagia for developing screening and treatment guidelines to reduce disease-associated morbidity and mortality.

The incidence rate and frequency of PVS among patients with dysphagia cannot be particularly described due to scarcity of literature. An old population-based study including 2346 females and 1994 males with dysphagia showed that the overall prevalence of PVS was 0.3 % to 1.1% and 8.4% to 22.4%, respectively [19]. Currently obtained findings suggest that PVS is not very frequent among the patients with dysphagia i.e. 6.7%. Similarly, a local study aimed to identify the etiology of dysphagia among adults reported that 3.7% of the enrolled cases were found to have PVS[20]. In contrast a more recent study displayed high frequency of PVS among women with early grade dysphagia [4].

IDA and dysphagia are the key investigating features in PVS patients [39]. We observed that dysphagia was more frequent among adults with a mean age of 43.83 ± 3.30 years, majority of the patients presented at the study site were > 40 years of age (Table-I). Our findings were very similar to a local study from Peshawar, where 42% of the enrolled patients with dysphagia were in between 36 to 45 years of age, and their reported frequency of PVS was 5% [21]. Patil et al., also confirmed the presence of high frequency of PVS middle aged women with dysphagia [4], which is also corroborated by other published studies [5,14]. Furthermore, the association of PVS with age, gender and duration of dysphagia was also assessed. We found no significant association of age and duration of dysphagia with the presence of PVS among the enrolled patients (p>0.05). While only gender had significant association (p<0.05). Among those having PVS, 90.9% were females (Table 2), which is similar to a local study in which 95.2% of the patients having PVS were females [21]. Hence, now it is considered a fact that the female gender with dysphagia is comparatively more prone to PVS than males [5,18-20]. Most patients with PVS (81.8%) had dysphagia for more than 4 weeks (Table-II). Hussain et al. reported that out of 21 PVS positive cases, 76.1% of patients had dysphagia from 4-5 weeks [21].
Very little is known relating to PVS locally and the available data is limited to case reports and small cohorts. This cross-sectional study was carried out to provide an insight into the frequency of this rare condition among patients with dysphagia in Bahawalpur. Studies with prospective designs involving multiple sites and larger sample sizes are required further to enhance knowledge about PVS and its risk factors, pattern of presentation, diagnosis and management.

**CONCLUSION**

The low frequency of Plummer Vinson Syndrome among the enrolled patients with dysphagia suggest the rare disease instance. Furthermore, a significantly high frequency of PVS was observed among the female patients having dysphagia. These patients with dysphagia should be followed closely for the presence of PVS, as they are predisposed to squamous cell carcinoma of the pharynx and the esophagus.

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**CONFLICTS OF INTEREST:** None.

**GRANT SUPPORT & FINANCIAL DISCLOSURES:** None.

**REFERENCES**


**Table-II: Association of Plummer Vinson Syndrome with age, gender and duration of dysphagia.**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Categories</th>
<th>Pvs (n=11%)</th>
<th>No PVS (n=153%)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>15 - 30 years</td>
<td>1(27.3)</td>
<td>57(37.3)</td>
<td>0.748</td>
</tr>
<tr>
<td></td>
<td>&gt;40 years</td>
<td>8(72.7)</td>
<td>96(62.7)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Male</td>
<td>1(9.1)</td>
<td>93(60.8)</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>Female</td>
<td>10(90.9)</td>
<td>60(39.2)</td>
<td></td>
</tr>
<tr>
<td>Duration of Dysphagia</td>
<td>2 – 4 weeks</td>
<td>2(18.2)</td>
<td>37(24.2)</td>
<td>1.00</td>
</tr>
<tr>
<td></td>
<td>&gt; 4 weeks</td>
<td>9(81.8)</td>
<td>116(75.8)</td>
<td></td>
</tr>
</tbody>
</table>

*p<0.05 is considered significant*

Very little is known relating to PVS locally and the available data is limited to case reports and small cohorts. This cross-sectional study was carried out to provide an insight into the frequency of this rare condition among patients with dysphagia in Bahawalpur. Studies with prospective designs involving multiple sites and larger sample sizes are required further to enhance knowledge about PVS and its risk factors, pattern of presentation, diagnosis and management.

Author's Contribution:
Nasir Wakeel: Substantial contributions to the conception and design of the work.
Masood Akhtar: Drafting the work and evising it critically for important intellectual content.
Aasma Tariq: Designed & contributed in manuscript writing.
Iqra Gull: Acquisition, analysis, and interpretation of data for the work.
Hamna Hafeez: Data analysis and manuscript writing.
Nayab Anjum: Collected the data and performed the analysis.

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