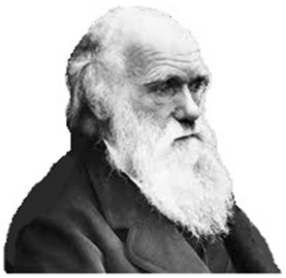
Available online at www.worldnewsnaturalsciences.com



World News of Natural Sciences

An International Scientific Journal

WNOFNS 18(2) (2018) 171-179 EISSN 2543-5426

Plummer Vinson Syndrome (PVS) with parotid gland squamous cell carcinoma in a young female

Swamy T. Prasada, Vangala Bramha Prasad, Lonkala Srividya*

Department of Pharma Analysis & Quality Assurance,
Jyothishmathi Institute of Pharmaceutical Sciences,
Beside LMD Police Station, Thimmapur, Karimnagar, India

*E-mail address: svps11288@gmail.com

ABSTRACT

Plummer Vinson syndrome, also known as 'Paterson Brown-Kelly' syndrome is a syndrome associated with the triad of symptoms comprising microcytic hypochromic anaemia, oesophageal strictures and dysphagia. PVS (Plummer Vinson Syndrome) is commonly found in women of middle age especially in the fourth and fifth decade of life and is rarely reported in males and young females. Symptoms resulting from anaemia predominate the clinical picture, apart from additional features such as glossitis, angular cheilitis, and dysphagia. Dysphagia, however, is the main clinical feature of PVS. PVS carries an increased risk of development of squamous cell carcinoma of oesophagus and pharynx[1]. A classic case report of PVS associated with swelling of the salivary gland with clinical features, oral manifestations, malignant potential, differential diagnosis, investigation, and treatment is discussed here. This article carries the message that oral and pharyngeal manifestations should be considered to rule out malignancy in PVS, moreover, that PVS increases the risk factor of salivary gland squamous cell carcinoma. Early identification and diagnosis improves the prognosis and better chances of survival. We have to be familiar, therefore, with the oral manifestations of anaemia and be able to suspect PVS to aid in early diagnosis and prompt treatment. This case study was taken from Medcare hospital, Karimnagar, Telangana.

***Keywords*:** Plummer Vinson syndrome, Squamous cell carcinoma, Salivary gland, Dysphagia, Anaemia

(Received 03 April 2018; Accepted 19 April 2018; Date of Publication 20 April 2018)

Case Report

1. INTRODUCTION

A young 22 year old female patient got presented to emergency department with chief complains of severe breathlessness, difficulty in swallowing, swelling over the anterior part of the neck region. Immediately patient airway, breathing and circulation were protected.

Blood sample taken from her, sent to lab for complete blood picture and arterial blood gas analysis. After 30 min patient get stabilized and to know the cause adequate time had given to the patient to reveal their full medical history and based on history, a thorough physical examination was done.

Her history revealed that she was suffering with shortness of breath since one week prior to the admission, Recurrent oral ulcers were noticed. When inquired about the ulcers, the patient gave history of recurrent ulcers at angle of mouth for past one year and difficulty in deglutition for liquid juices and plain water and not for solids. On general examination, patient's palpebral conjunctiva was pale, signifying anaemia and spoon shaped finger nails (koilonychia) were presented.

Intraoral examination revealed difficulty in mouth opening and pigmented oral ulcers were at right side corner of the her mouth and in addition to it swelling over the anterior region of the neck extending to cheek region and complained severe pain and tenderness on palpation.

Investigations were significant for a profound iron deficiency anaemia. On ENT evaluation showed that oedema of the mandibular and parotid salivary gland and diagnosed it as sialadenitis. Upper Gastro Intestinal Endoscopy (UGI) tried to this patient but scope not passed and evaluated it as oesophageal cricoid web then immediately mechanical dilatation of cricoid web done under local Anaesthesia.

After all these findings concluded that patient was diagnosed as Plummer Vinson syndrome with oral manifestations. Patient treated with antibiotics, iron sucrose, proton pump inhibitors, blood pcv transfusion was done, After 5 days of treatment the swelling of submandibular salivary gland and sublingual gland shows reduced in size but parotid gland swelling remained.

Patient undergone FNAC Biposy test then patient discharged and advised to revisit with FNAC report and it shows The histopathological examination of parotid gland revealed squamous cell carcinoma and it concludes malignancy at earlier stages and The sub mandibular gland was benign possibly adenomatous precancerous state. Patient referred to the surgical, medical oncologist. They given radiation and chemotherapy to her. She improved better and continued oral supplementation medications.

2. INVESTIGATION RESULTS

2. 1. DEPARTMENT OF HAEMATOLOGY: Haemogram

TEST	VALUES	UNITS	NORMAL RANGE
HAEMOGLOBIN	3.8	g/dL	MALE: 13.5-18 FEMALE: 12-15
TOTAL WBC COUNT	3500	Cells/cu mm	4000-11000
RBC COUNT	3.0	M/cu mm	M: 4.5-5.5, W: 3.8-4.8
Neutrophils	86	%	40-75
Lymphocytes	10	%	20-45
Eosinophils	1	%	01-06
Monocytes	3	%	02-10
Basophils	0	%	00-01
PCV	29	Vol %	40-54
MCV	72.2	fL	78-98
MCH	21.3	Pg	27-32
MCHC	29.6	g/dL	30-36
PLATELET COUNT	1.4 Lakh	/cu mm	1.5-4.5 lakh
PERIPHERAL SMEAR: R B C MORPHOLOGY: Microcytic hypocromic with elongated forms, tear drop cells, W B C: Mild leucopenia, PLATELETS: Mild thrombocytopenia Serum iron 20 µg/dL Serum ferritin. 3.26 ng/mL			

* This Haemogram report is taken from the medcare hospital of the above mentioned female patient Hospital Id:89597

2. 2. UPPER GASTRO INTESTINAL ENDOSCOPY

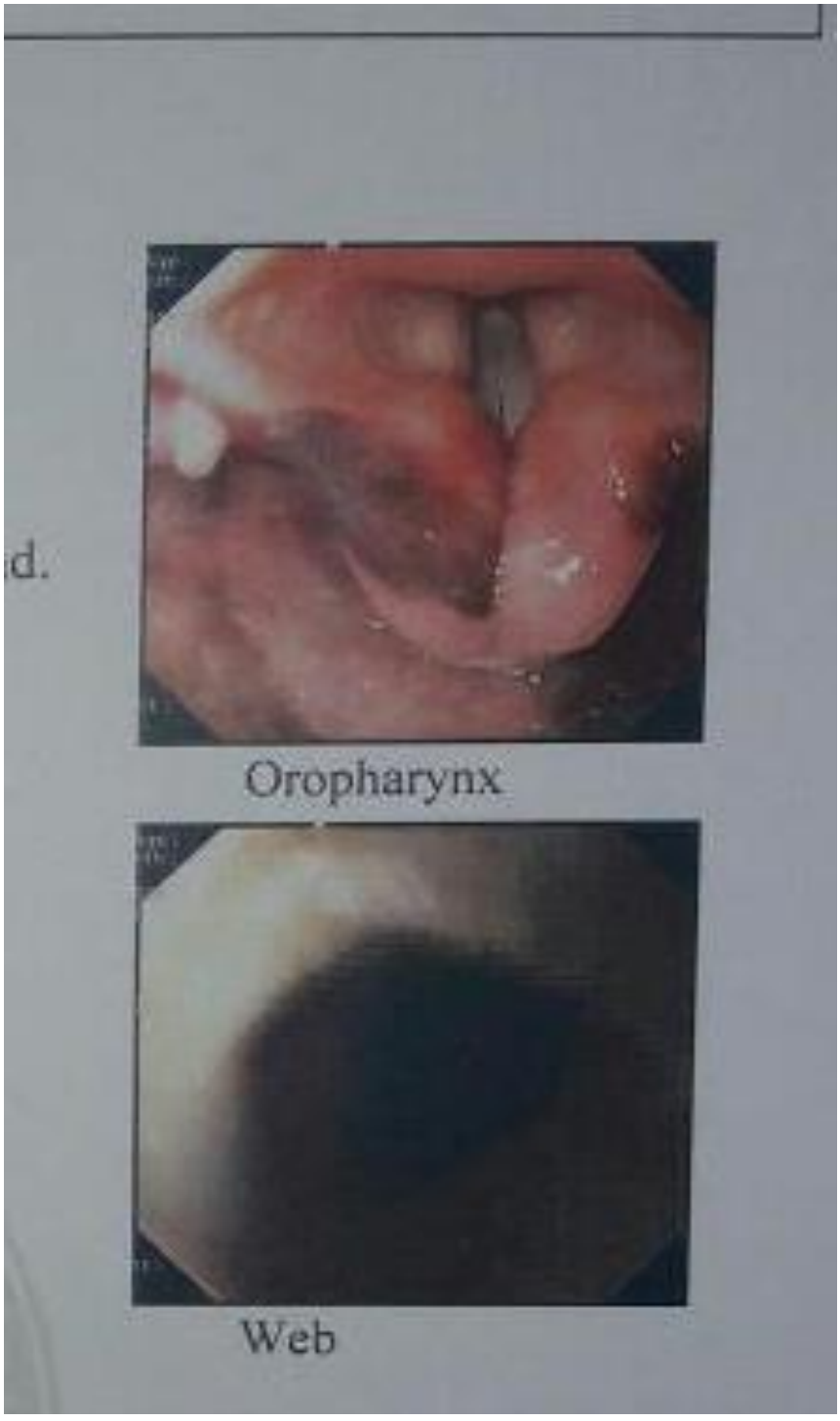


Fig. 1. Post cricoid web: Endoscopy.

Case study report of the upper GI endoscopy of the above mentioned young female

3. HISTORY

In 1912, Henry Stanley Plummer reported dysphagia in series of patients who presented with diffuse dilation of oesophagus and upper oesophageal spasm without anatomical stenosis, which was described as hysterical or neurosis of unknown origin[2]. Subsequently, Porter Paisley Vinson in 1919 reported a relation between the dysphagia and angulation of the oesophagus and also stated that its a triad of three characteristic of features: anaemia, dysphagia, and atrophic glossitis. Since then, the syndrome associated with these symptoms has been called Plummer Vinson syndrome. PVS is also termed as Paterson-Kelly syndrome, named after Donald Ross Paterson and Adam Brown-Kelly, who first described the characteristic clinical features of the syndrome and published their findings independently in 1919[3]. This syndrome is also known as Sideropenic dysphagia which implies the burning sensation or throat pain while swallowing. The radiological features of this syndrome was described by Jan Waldenstrom and Sven Roland Kjellberg in 1939[4].

4. EPIDEMIOLOGY

The data regarding occurrence of carcinoma of the salivary gland in Plummer Vinson syndrome patients were not evidently available. Only case reports and few case series about the squamous cell carcinoma of the oesophagus and pharynx have been published in literature. In the early 20th century PVS seemed to be common in Caucasians of Northern countries, particularly among middle-aged women, with the mean age at presentation being 47 years (range 28–80 years)[5]. However, some paediatric and adolescent cases were also reported[6]. PVS has a remarkably high female to male ratio of 4: 1. Recently, few reports of PVS in male patient are being published leading to notion that PVS might be common in both males and females[2]. Our case report showed a young female 22 years old patient who presented with clinical features of PVS with oral manifestations leading to salivary gland tumor reported. However, presentation of PVS cases reported in hospital was rare due to improvement of nutritional status in the developing countries also due to the availability of iron and folic acid tablets and syrups but in India still facing of iron deficiency anaemia cases regularly in rural areas; However it should be considered in cases of iron deficiency and dysphagia due to its malignant potential and its Literature and some Evidence cases shows PVS Carries an increased risk of development of squamous cell carcinoma of the oesophagus and pharynx but our report shows adding additional point to the literature that squamous cell carcinoma of the salivary gland(parotid) also present[7].

Some literature showed Salivary gland tumors were classified as benign and malignant tumors. Male to female ratio (M/F) and the mean age of patients were 1:1.8 and 43 years, respectively. Pleomorphic adenoma (60.71%) and cystic adenoid carcinoma (14.94%) were the most common benign and malignant neoplasms[7].

5. ETIOPATHOGENESIS

The exact etiopathogenesis of the PVS remains controversial. But iron deficiency anaemia, nutritional deficiencies, genetic predisposition, and autoimmune aetiologies may be the contributing factors. Iron deficiency anaemia is most widely accepted aetiology as the symptoms are improved with iron supplementation as also noted in our patient[8]. Deficiency

of iron in the blood caused rapid depletion of iron-dependent oxidative enzymes which results in myasthenic changes in muscles of alimentary tract, causing mucosal degeneration, muscle atrophy, and oesophageal web formation, and also leads to neoplastic changes of the pharynx and upper oesophagus. An autoimmune mechanism is positively associated as PVS, as it has been reported in association with rheumatoid arthritis, celiac disease, pernicious anaemia, and thyroiditis.

A wide variety of neoplasms takes origin in the salivary glands and are also relatively uncommon. The histopathology examination of these tumors are said to be the most complex and diverse of any organ in the body[9]. Histopathological diagnosis plays a major role in the diagnosis of these neoplasms, with very few contribution using special stains, immunohistochemistry and cytogenetic studies. Salivary glands are classified into three types i.e parotid (located at front of the ears, largest in size), sub mandibular (loacated below the jaw, smaller), sub lingual (located under the floor of the mouth and below either side of the tongue, smallest). About 7 out of 10 salivary gland tumors start in the parotid. Most of these tumors are benign (not cancer), but the parotid glands still are where most malignant (cancerous) salivary gland tumors start. The submandibular glands secrete saliva under the tongue and about half of these tumors are malignant. Tumors in sublingual glands are rare.[10]

6. CLINICAL FEATURES AND ORAL MANIFESTATIONS

The main clinical features of PVS include the triad of iron deficiency anaemia, cervical dysphagia and oesophageal webs. The dysphagia is usually painless and initially limited to solids and sometimes associated with weight loss. Over time, dysphagia can progress to involve liquids as well. The progressive dysphagia is often tolerated by the patients for limited period of time without seeking medical advice, leading to a late complications.

Oesophageal web is thin membrane and its approximately 2-3mm size, covered with pink mucosa, consisting of mucosa and submucosa without the muscle layer, usually occurring in the proximal 4-5 cm of oesophagus. These oesophageal webs are usually eccentric, semilunar, or annular and present with dysphagia if the diameter of the lumen through the web is less than 12 mm[11]. Patients also usually complain of anaemic symptoms such as generalised weakness, pallor, fatigue, and tachycardia. Other features may be include esophagitis, cardiospasm, achlorhydria, nail deformation that includes koilonychias or clubbing, enlargement of spleen and thyroid, splenic tumors, seborrheica, dermatitis, conjunctivitis, hyperkeratosis, keratitis, blepharitis, and visual disturbances. Plummer Vinson syndrome with oral manifestations includes all the features of iron deficiency anemia like stomatitis, glossitis, angular cheilitis, erythematous mucositis, aphthous ulcers, stomatitis, pale oral mucosa, oral candidiasis, siladenitis due to improper oral hygiene[1]

In the present case, the patient suffered from dysphagia, ulceration, and burning sensation in his mouth, glossitis, angular cheilitis, and koilonychias which included most of the common oral manifestation and sub mandibular and parotid gland swelling.

7. LABORATORY TESTS

Haematological investigation typically reveals iron deficiency anaemia with decreased values of haemoglobin, PCV, MCV, and serum ferritin and increased total iron binding capacity. Peripheral smear study reveals microcytic hypochromic anaemia. Few authors

suggest thyroid profile to rule out hypothyroidism as thyroid hormones are involved in haemoglobin synthesis and hence may lead to anaemia. Haematological investigations in our patient were significant for a profound iron deficiency anaemia and Pancytopenia and Hypothyroidism.

8. RADIOGRAPHIC EXAMINTATION

Oesophageal webs and strictures can be detected by radiographic methods or endoscopy. Our patient undergone endoscopy and revealed it was post cricoid web. Ultrasound examination showed submandibular glands were mild enlarged in size with increased vascularity and subcentimeter bilateral level IB lymph nodes and Diffusely moderately enlarged size of the parotid glands with thickened echogenic tissue suggestive of malignancy and advised FNAC biopsy. Microscopic and histopathological examination of biopsy specimen suggestive of the parotid gland squamous cell carcinoma in the earlier stage, submandibular glands were benign nature possibility of adenoma.

9. DIAGNOSIS

The diagnosis of PVS on the basis of iron deficiency anaemia and oesophageal web with postcricoid dysphagia and oral manifestations. Hence, the diagnosis relies on thorough history taking, general clinical examination, haematological investigation (anaemia profile), and radiological examination and HRUSG of the neck. Supplementary investigation like direct endoscopic examination, videofluoroscopy, and biopsy taking for histopathological examination might be required in few patients[3]. Our patient presented with the classic triad and also haematological and radiological investigation are suggestive of PVS.

10. DIFFERENTIAL DIAGNOSIS

Differential diagnosis of PVS and swelling of the anterior part of the neck and cheek includes likely causes of dysphagia due Pharyngitis, tonsillitis, malignant tumors, spastic motility disorders, benign strictures, scleroderma, diverticula, achalasia, gastroesophageal reflux disease, oesophageal burns, skeletal muscle disorders, and neuromuscular disorders, thyroidits[1].

11. MALIGNANT POTENTIAL

PVS is precancerous condition & is a risk factor for developing squamous cell carcinoma of the upper gastrointestinal oesophagus and pharynx in 3–15% of patients mostly in women of middle aged 30-47 years of age and almost occurs in the postcricoid region. The mechanism involved is that the anaemia causes epithelial atrophy, decreases the repair capacity of the mucosa which allows the cocarcinogens and carcinogens to act aggressively, predisposes the entire oral cavity and oesophageal area to malignancy[12]. A rare association of this syndrome with base of tongue cancers has been reported in literature[5]. Hence, these patients should be followed up by upper gastrointestinal endoscopies to assess any neoplastic changes. The patient with PVS should advised to take a nutritious diet to maintain the integrity and maturative potential of the oral epithelium due to its malignant potential[13].

The clinical outcome was similar between metastatic squamous cell carcinoma and primary squamous cell carcinoma of submandibular and parotid salivary gland, regardless of treatment plan[14-15].

12. CONCLUSION

Many systemic diseases manifested in the oral cavity and it shows early signs or the only signs of a disease process at a site elsewhere. PVS is one such systemic condition with predominant oral symptoms. As PVS is a precancerous condition with high malignant potential, early diagnosis is of earliest importance for better prognosis and outcome. Emergency physicians should practice the art of interviewing the patient towards revealing their full medical history and perform an effective and complete clinical examination.

Final end conclusion is the above case report showed that Plummer Vinson syndrome is increases the risk factor of salivary gland squamous cell carcinoma.

References

[1] Abdul S., Mohan N., Suresh Balaji RV., Dominic A., and Patil SG. Oral manifestations of Plummer-Vinson syndrome: A classic report with literature Review. *Journal of International Oral Health*, 2015 Mar; 7(3): 68–71.

[2] Swain S. K, Panigrahy R., Sahu M. C. Plummer vinson syndrome in a male and his chromosomal study—a case report. *Egyptian Journal of Medical Human Genetics* 2015; 16(3): 283–286.

[3] Ali Solmaz, Osman Bilgin Gulcicek, Talar Vartanoglu,Erkan Yavuz, Hakan Yigitbas, Candas Ercetin, Atilla Celik, Fatih Celebi. Endoscopic management of dysphagia in plummer–vinson syndrome, *Bagcilar Medical Bulletin* 2017; 2(1): 25-2.

[4] Jan Waldenstrom, Sven Roland Kjellberg. The Roentgenological Diagnosis of Sideropenic Dysphagia. *Acta Radiologica*, 20, 6, (1939) 618-638.

[5] Novacek G. Plummer-vinson syndrome. *Orphanet Journal of Rare Diseases* 2006; 1(1): 1750-1172.

[6] Demirci F., Savaş M. C., Kepkep N., et al. Plummer-vinson syndrome and dilation therapy: a report of two cases. *Turkish Journal of Gastroenterology* 2005; 16(4): 224–227.

[7] Naik S. M., Shivakumar M. C., Appaji M. K., Ravishankara S., Naik S. S., de Souza C. A case of plummer-vinson syndrome esophageal web dysphagia treated by dilatation with cuffed endotracheal tube. *International Journal of Head and Neck Surgery* 2011; 2(3): 161–165.

[8] Shreedevi S Bobati, B V Patil and V D Dombale. Histopathological study of salivary gland tumors. *J Oral Maxillofac Pathol.* 2017 Jan-Apr; 21(1): 46–50.

[9] Hasan S., Khan N. I., Siddiqui A. Plummer Vinson Syndrome-A premalignant condition-an overview of literature. *Journal of Medical and Dental Sciences* 2013; 1(1): 28–30.

[10] Ivica Lukšić, Mišo Virag, Spomenka Manojlović, Darko Macan. Salivary gland tumours: 25 years of experience from a single institution in Croatia. *Journal of Cranio-Maxillofacial Surgery*, 2012; 40(3): 75-81.

[11] Vittal K., Pandian S. S., Malarkodi T. Plummer – Vinson Syndrome: a case report and medical management. *IJSS Case Reports & Reviews* 2015; 2(6): 10–13.

[12] Bakshi SS and Satvinder Singh. Plummer Vinson Syndrome - is it common in males? *Arquivos de Gastroenterologia*, 2015; 52(3): 250-252

[13] Lawoyin D., Reid E., Sam F., Obayomi T., Bonnick A. Plummer Vinson Syndrome: a case report and literature review. *The Internet Journal of Dental Science.* 2006; 5(2).

[14] Priyadarshini Karthikeyan, Nalini Aswath and Ramesh Kumaresan. Plummer Vinson Syndrome: A Rare Syndrome in Male with Review of the Literature. *Case Reports in Dentistry*, 2017. https://doi.org/10.1155/2017/6205925

[15] Lynch TJ et al. Activating Mutations in the Epidermal Growth Factor Receptor Underlying Responsiveness of Non–Small-Cell Lung Cancer to Gefitinib. *New England Journal of Medicine*, 2004 May 20; 350(21): 2129-39.