

## Original Article

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# Factors Influencing Ludwig's Angina

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### Abstract

**Introduction:** Ludwig's angina is a rapidly progressive, potentially fulminant cellulitis involving the sub-lingual, submental and sub-mandibular spaces. It typically originates from an infected or recently extracted tooth, most commonly the lower second and third molars. Besides, poor nutritional status, lack of proper medical supports are still major predisposing factors in developing Ludwig's angina in countries like Bangladesh.

**Aim:** Our study aimed to observe etiological factors, clinical presentations, causative agents and treatment response.

**Method:** We carried out a cross sectional study among 26 patients with Ludwig's angina admitted in the department of ENT and Head-neck surgery in Mitford Hospital from January-December-2012.

**Results:** In this study we found that males are predominantly affected than females (22 males and 4 females, ratio-5.5:1) with odontogenic infection (15, 57%) as source. We found history of recent tooth extraction in 5 cases (19.2%) & organism was isolated from pus culture, Klebsiella in 5 cases (19.2%) out of 13 cases. In this study we found tooth cleaning habit of patients by tooth brush 18 cases (69.2%). We elicited underlying systemic disease mainly Diabetes Mellitus in 4 cases (15.3%) and Chronic renal failure in some of our cases but could not reach in a conclusion as to whether systemic illness predisposes to Ludwig's angina.

**Conclusion:** Our study suggests that prompt and thorough clinical evaluation and definitive care will considerably improve patient condition and reduce morbidity and mortality.

**Key words:** Submental, submandibular, odontogenic, Klebsiella

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### Introduction:

Ludwig's angina is a rapidly progressive, potentially fulminant cellulitis involving the sub-lingual, sub-mental and sub-mandibular spaces. It was named after the German physician Wilhelm Friedrich Von Ludwig who first described the condition in 1836<sup>1</sup>. Angina is derived from Latin word angere which means to strangle. This name refer to the choking effect of Ludwig's angina on its Victims. Ludwig's angina is odontogenic in origin in up to 90% of cases<sup>2</sup>, although oral lacerations, mandible fractures, sialoadenitis have also been implicated<sup>3</sup>. Ludwigs angina is sometimes associated with Diabetes Mellitus in 18% cases, AIDS in 9%

cases<sup>3</sup>Without a treatment it is frequently from the risk of asphyxia with a mortality rate of 50%. The aggressive surgical intervention, appropriate antibiotic introduction and the improvement of dental care have determined a significant reduction of the mortality rate to less than 10%<sup>4</sup>.

#### Materials and methods:

The study was done on 26 patients treated in the department of ENT & Head-Neck surgery of Sir Salimullah Medical College Mitford Hospital, Dhaka from January, 2012 to December, 2012. It was a cross sectional study.

#### Results:

In this study we found that males are predominantly affected than females (22 males and 4 females, ratio-5.5:1)

**Table-I**  
*Age distribution of the patients*

Age group	Number of patients
0-10	2
11-20	2
21-30	3
31-40	3
41-50	3
51-60	7
61 and above	6

In this study, patients of 5<sup>th</sup> decade were mostly suffered from Ludwig's angina.

**Table-II**  
*Association with risk factors*

Risk factors	Frequency	Percentage
Dental caries	15	57%
DM	4	15.3%
H/o tooth extraction	5	19.2%
Tonsillar infection	1	3.8%
Others	1	3.8%

15(57%) patients presented with dental problems followed by Diabetes Mellitus (15.3%) and H/O tooth extraction (19.2%).

**Table-III**

*Tooth cleaning habits of the patients.*

Materials	Frequency	Percentage
Meswak	2	7.6%
Ash	5	19.2%
Tooth paste with brush	18	69.2%
Tooth powder	1	3.8%

If we consider tooth cleaning habit we found that 18 patients were used to clean their tooth by tooth brush with paste.

**Table-IV**

*History of recent tooth extraction.*

History	Frequency	Percentage
Positive history	5	19.2%
Negative history	21	80.2%

5(19.2%) out of 26 patients gave positive history of recent tooth extraction.

**Table-V**

*Organism isolated from the pus (n=13)*

Name of organism	Number of patients	Percentage
Klebsiella	5	19.2%
Pseudomonus	1	3.8%
Enterococci	2	7.6%
Proteus	2	7.6%
E. coli	1	3.8%
Fusobacterium	1	3.8%

Though we tried with all available facilities, we couldn't save one patient (1 out of 26 patient, about 4%).

**Discussion:**

Twenty-six patients of Ludwig's angina were included in this study. Patients of all age, sex and social status were included in this study. The results of our study showed certain facts influences Ludwig's angina significantly.

Our findings are consistent with earlier reports showing male preponderance<sup>5</sup>. No age is immune from Ludwig's angina. Age range of the patient was between 3yrs-79yrs. Common age group suffered from this disease is sixth decade.

Ludwig's angina can arise from variable sources such as odontogenic infection or complicated cases of sialadenitis. In our study we found dental caries as the most predominant factor which are similar with other studies<sup>2</sup>.

Next to dental caries we found patient with Diabetes Mellitus and H/O tooth extraction as common sufferer of Ludwig's angina. Unhygienic teeth due to poor oral hygiene maintenance plays some role in Ludwig's angina. Unhygienic oral environment acts as a foci of infection in adjacent area causing Ludwig's angina. Previous literatures support this finding<sup>6</sup>.

We got Klebsiella as the commonest organism found in the pus. Beside this, proteus and enterococci were isolated also. We could be able to collect pus from 13 patients. The isolates in the present study are not always consistent with findings in previous reports<sup>7</sup>. Small sample size may explain this dissimilarity.

**Conclusion:**

Ludwig's angina can be life threatening. It can be cured with proper treatment of the airway

and appropriate antibiotic. Dental caries and unhygienic teeth are common influencing factors associated with Ludwig's angina which are preventable. We must be very careful during treating Ludwig's angina because of fatality rate of about 4%.

**References:**

1. Saifeldeen K, Evans R. Ludwig's angina. *Emerg Med J*. 2004;21:242-3
2. Andreoli, Bennet, Carpentar, Plum and smith, 1993. *Cecil Essentials of Medicine, Third Edition*. p.702-723.
3. Har-EI, Aroesty, Shaha and Lucente, 1994. *Changing Trends in Deep Neck Abscesses, Oral Surgery Oral Medicine Oral Pathology*;77:446-50.
4. Britt JC, Josephson GD, Gross CW, Ludwig's angina in the pediatric population; Report of case and review of the literature. *Int. J. Pediatr. Otorhinolaryngology*, 2000;52:79-87.
5. Hartmann, R.W. Jr. 1994. Ludwig's Angina. *Am Fam Physician* 1999;60:109-112. <http://www.aafp.org/afp/990700ap/109.html> Accessed 2.27.2010. *Oral Surgery Oral medicine Oral Pathology*;77:446-50.
6. Honrado, C.P., Lam, S.M. and Karen M., 2001. Bilateral submandibular gland infection presenting as Ludwig's angina: first report of a case. *Ear Nose Throat J*;80:217-8, 222-223.
7. Iwu, C.O., 1990. Ludwig's angina: report of seven cases and review of current concepts in management. *Br J Oral Maxillofac Surg*;189-193.