

Etiological Factors for Squamous Cell and Adenocarcinoma of Oesophagus with Reference To Blood Groups

Dr Rishi Ram Meena¹, Dr O. P Meena²

¹ Resident Of Department Of General Medicine

² Professor and Unit Head Of Department Of General Medicine, RNT Medical College, Udaipur

Correspondence Author:

Dr Rashmi Gupta

Assistant Professor Department of community Medicine, JLN Medical College, Ajmer

Email: drrashu53@rediffmail.com

Abstract

Study Question: Etiological Factors for Squamous Cell And Adenocarcinoma Of Oesophagus With Reference To Blood Groups

Objective: To Assess and Compare The Etiological Factors of different histological subtypes of oesophageal cancer (squamous cell and Adenocarcinoma) with special reference to blood groups.

Methodology:

The Institution based, comparative observational cross sectional study was conducted in R.N.T. Medical College on 50 patients diagnosed as cases of squamous cell and adenocarcinoma of esophagus according to endoscopic, biopsy and its histopathological report, admitted in In –patient department of General medicine, General Surgery, Oncology & ENT were included in the study from November 2014 to December 2015. Patients insisting on having treatment from abroad and who having pregnancy were excluded from study

Result: Out of 50 cases, 39 (78%) were squamous cell carcinoma and 11 (22%) were adenocarcinoma. Squamous cell carcinoma patients, 10 (20%) belong to age group of 30-50 year and 25 (50%) were male, 14 (28%) were Female. From Adenocarcinoma Patient, 04 (8%) were male and 07 (14%) were Female. The distribution of blood groups in the esophageal squamous cell carcinoma patients (n = 39) was (7.69%) blood group A, 12 (39.77%) blood group B, 8 (20.51%) blood group AB, and 16 (41.03%) blood group O. Rh status was positive in (88.2%) and negative in (11.8%) patients. According to presence of B antigen (blood groups B and AB) and without B antigen (blood groups A and O), this difference was significant among the carcinoma type (P < 0.0075)

Keywords: oesophageal cancer (squamous cell and Adenocarcinoma), blood groups.

I. Introduction

Esophageal cancer (EC) is the 8th most common incident cancer in the world and because of its high fatality rate, ranks 6th among all cancers in mortality^{1,2}. Based on clinical observations, Craver in 1932 and Watson in 1939 list excessive use of alcohol and tobacco, low socioeconomic status, poor oral health, and consumption of hot drinks as risk factors for EC^{3,4}.

In India, Pakistan and Srilanka the high incidence of esophageal Carcinoma has been linked with chewing of tobacco with or without betel nut and leaf salked lime. The current Indian population is 1,270,272,105 (1.27 billion). According to Indian Council of Medical Research (ICMR) the major three cancers contributing were stomach cancers (19.8%), esophagus (18.6%) and colon cancers (14.2%).⁵

The incidence of cancer in India is 70-90 per 100,000 population and about 6% of all deaths in India are due to cancers which contribute to 8% of global cancer mortality.⁶

Scientists have found several factors that affect risk of cancer of the esophagus. Some are more likely to increase the risk for adenocarcinoma of the esophagus and others for squamous cell carcinoma of the esophagus. The chance of getting esophageal cancer is low at younger ages and increases with age. Less than 15% of cases are found in people younger than age 55, Men are more than 3 times as likely as women to get esophageal cancer, Gastroesophageal reflux disease, Barrett's esophagus, Tobacco and alcohol, Obesity, Diet, Achalasia, Tylosis, Plummer-Vinson syndrome, Paterson Brown Kelly syndrome, Workplace exposures, History of certain other cancers, Human papilloma virus (HPV) infection.⁸

According to Indian Council of Medical Research (ICMR) data on site specific cancer burden, in males, the most common are cancers of mouth/pharynx, esophagus, stomach, lung/bronchi while as in females, the common cancers are cervix, breast, mouth/oropharynx and esophagus.

Oesophagus cancers are usually found because of signs or symptoms a person is having.⁸ This study was conducted with a view to assess and compare the etiological factors of different histological subtypes of oesophageal cancer (squamous cell and Adenocarcinoma) with special reference to blood groups.

II. Materials And Methods

The study was conducted in R.N.T. Medical College and Associated Groups of Hospitals of UDAIPUR in (SOUTHERN RAJASTHAN). The main catchment area was rural with few township and municipal area. A total number of 50 patients of all the age groups, both sexes and various occupation's Diagnosed as cases of squamous cell and adenocarcinoma of esophagus according to endoscopic, biopsy and its histopathological report, admitted in In-patient department of General medicine, General Surgery, Oncology & ENT were included in the study from November 2014 to December 2015.

Patients who had multiple concurrent tumors found on CT scan in other parts of GIT, Patients who were bound to be lost in follow up, Patients insisting on having treatment from abroad and who having pregnancy were excluded from study. The study was an Institution based comparative observational cross sectional study. Detailed history of patient was enquired and entered in proforma along with Complete haemogram, blood urea, serum creatinine, serum electrolyte will be sent and results obtained, Preliminary x-ray chest, and abdominal ultrasound, Preliminary upper GI endoscopy and biopsy was taken and sent for histopathological examination and Patients were put on conservative line of management.

At the end of study, the data was compiled, tabulated and analysed by PRIMER. The qualitative data was presented as proportion and percentages and proportion were compared using Chi-square tests. P value < 0.05 was considered significant. The study has been approved by local ethical committee of RNT Medical College Udaipur.

III. Result

The mean age of the study population was 69.62 ± 12.433 (35 to 80 years), more common in 51 to 70 years of age groups, 29(58%) among males. Majority 54% were Tobacco chewer and Smoker, 87% were alcoholic. Out of 50 cases, 39 (78%) were squamous cell carcinoma and 11(22%) were adenocarcinoma. From 39 Squamous cell carcinoma patients, 10 (25.64%) belong to age group of 30-50 year, 16 (41.03%) belongs to age group of 51-70 year and 13 (33.33%) belongs to the age group of above 70 year. From 11 Adenocarcinoma Patient, 04(36.36%) belongs to the age group of 51-70 years and 07(63.64%) belongs to the age group of above 70 years. Among Squamous cell carcinoma patients, 25 (64.10%) were male, 14 (35.90%) were Female. From Adenocarcinoma Patient, 04(36.36%) were male and 07(63.64%) were Female.

Among squamous cell carcinoma patients, 07 (17.95%) had the habit of tobacco consumption from chewing, 03 (7.69%) had the habit of smoking, 20 (51.28%) had the habit of both chewing and smoking, 05(12.82%) had the habit of tobacco sniping and 04 (10.26%) had the habit of tobacco brushing. Among Adenocarcinoma Patient, 03(27.27%) had the habit of tobacco consumption from chewing, 07(63.64%) had the habit of both chewing and smoking, 01(9.09%) had the habit of tobacco sniping.

Squamous cell carcinoma patients, 33 (84.62%) had the habit of Alcohol consumption. Among Adenocarcinoma Patient, 07 (63.64%) had the habit of Alcohol consumption. Squamous cell carcinoma patients, 05 (12.82%) had Reflex 2-3/24 hours, 09 (23.08%) had Reflex 4-6/24 hours, 05 (12.82%) had Reflex 6-8/24 hours and 20 (51.28%) had no any Reflex. Among Adenocarcinoma Patient, 02 (18.18%) had Reflex 2-3/24 hours, 02 (18.18%) had Reflex 4-6/24 hours, 01 (9.09%) had Reflex 6-8/24 hours and 06 (54.6%) had no any Reflex. The Plummer vinson Syndrome were observed in 16 (41.03%) of Squamous cell carcinoma patients, and 02 (18.18%) of Adenocarcinoma Patient. Among Squamous cell carcinoma and Adenocarcinoma patients, 05 (12.82%) and 02 (18.18%) respectively had a history of previous malignancy and history of previous radiotherapy. Most common clinical presentation was Dysphagia followed by weight loss in both the type.

The distribution of blood groups in the esophageal squamous cell carcinoma patients ($n = 39$) was (7.69%) blood group A, 12 (39.77%) blood group B, 8 (20.51%) blood group AB, and 16 (41.03%) blood group O. Rh status was positive in (88.2%) and negative in (11.8%) patients. Overall, blood group O is the most prevalent blood group in general population and patients with squamous cell carcinoma of esophagusocarcinoma. While in adenocarcinoma most common Blood group was observed Group A.

In comparison, of individuals with the presence of B antigen (blood groups B and AB) and without B antigen (blood groups A and O), this difference was significant ($P < 0.0075$) presence of B antigen were more in squamous cell carcinoma while all cases were with Absence of B antigen in Adenocarcinoma. (Table 3, Figure 2)

IV. Discussion

The age and gender wise distribution in the study was in accordance with other studies in literature. There was no significant Association were observed Squamous cell & Adenocarcinoma of esophagus. between age and gender wise Rural/ Urban. Ali Aminian (2010) also observed the similar There was no statistically significant association characteristics was observed between the type of carcinoma with age, gender, Literacy, tobacco consumption, Alcohol consumption, annual family income..

Not significant Association between GERD and Plummer vinson Syndrome Thecaustic injury caustic injury Acahalsia wise distribution with Squamous cell & Adenocarcinoma of oesophagus. wise distribution in the study was in accordance with other studies in literature.

There was no significant association between history of previous malignancy,previous radiotherapy wise distribution with Squamous cell & Adenocarcinoma of esophagus. The clinical presentation wise distribution in the study was in accordance with other studies in literature.

The distribution of blood groups in the esophageal squamous cell carcinoma patients ($n = 39$) was (7.69%) blood group A, 12 (39.77%) blood group B, 8 (20.51%) blood group AB, and 16 (41.03%) blood group O. Rh status was positive in (88.2%) and negative in (11.8%) patients Overall, blood group O is the most prevalent blood group in general population and patients with squamous cell carcinoma of esophagusocarcinoma While in adenocarcinoma most common Blood group was observed Group A.

In comparison, of individuals with the presence of B antigen (blood groups B and AB) and without B antigen (blood groups A and O), this difference was significant ($P < 0.0075$) presence of B antigen were more in squamous cell carcinoma while all cases were with Absence of B antigen min Adenocarcinoma

Min Su et al (2001) Although blood group B in total patients with CC and female patients with CC were 2.3% and 1.5% higher than the corresponding controls, the difference was not significant Ali Aminian, (2010) Overall, the most prevalent blood group both in SCC and the general population was A. Caygill CP, (2011) was observed Increased B blood group in the esophageal squamous cell carcinoma and increased O blood group for adenocarcinoma [19of esophagus have been reported. SU M et al (2011) In esophageal cancer patients, 33.1% blood group A, 31.7% blood group O, 25.9% blood group B, and 9.3% blood group AB were observed . Rh antigen was present in 92% and absent in 8% of the patients. Narendra Kumar(2014) SCC of esophagus shows blood group B is found to be higher in incidence ($P = 0.0001$). Increased risk of cancer was observed with absence of Rh antigen ($P = 0.0001$)

These findings were suggest that the presence of B antigen plays an important role in esophageal cancer development by the susceptible genetic mutation in the vicinity of the locus of blood group genes that involves various etiological mechanisms. The hypothesis for this association of squamous cell carcinoma of esophagus with the presence of B antigen (B + AB blood group) is based on the grounds that it can protect the tumor cells by masking the immune system for the cancer cell that presents with an antigen similar to that of B antigen of blood group.

V. Conclusion

The present study highlights that Squamous cell carcinoma of esophagus was more common than Adenocarcinoma of Esophagus. The prevalence of esophageal carcinoma increases with Age. Esophageal carcinoma is more common in male than female. The habit of tobacco and alcohol consumption increases the risk factors of carcinoma of esophagus. The patient clinical presentation strongly help to diagnose the carcinoma of esophagus.

The study result highlights that rural/ urban area,literacylevel,annual family income, GERD, Plummer Vinson Syndrome, Caustic injury, Acahalsia, Previous h/o Malignancy , Previous h/o Radiptherapy and Blood Group not affect the carcinoma of esophagus.

Reference

- [1]. Kamangar F, Dores GM, Anderson WF. Patterns of cancer incidence, mortality, and prevalence across five continents: defining priorities to reduce cancer disparities in different geographic regions of the world. *J ClinOncol*. 2006; 24(14):2137–50.
- [2]. Parkin DM, Bray F, Ferlay J, et al. *Global ca*
- [3]. *Cancer Statistics, 2002*. *CA Cancer J Clin*. 2005;55(2):74–108.
- [4]. Craver LF. Clinical study of etiology of gastric and esophageal carcinoma. *Am J Cancer*. 1932;16(1):68–102.
- [5]. Watson WL. Cancer of the esophagus: some etiological considerations. *Am J Roentgenol*. 1939;41(3):420–4.
- [6]. *Sabiston Text Book of Surgery*, Pg. 690, 14th Edition, by F. Charles, Dana K Anderson, Timothy.
- [7]. *Cancer Society of India* www.cancer.org >http >
- [8]. *Cancer Scenario in India* [dailyexcelsior](http://dailyexcelsior.com) (2/11/14)
- [9]. Ali Aminian, Rasoul Mirsharifi, Abbas Alibakhshi, Zhamak Khorgami,Relationship Between Esophageal Cancer and Blood groups. *World Applied Sciences Journal* 8 (4): 503-508, 2010 ISSN 1818-4952 © IDOSI Publications, 2010
- [10]. Min Su, Lu S-M, Tian D-P, et al. Relationship between ABO blood groups and carcinoma of esophagus and cardia in Chaoshan inhabitants of China. *World Journal of Gastroenterology*. 2001;7(5):657–661.[PMC free article] [PubMed]
- [11]. Caygill CP, Royston C, Charlett A, et al. Barrett's, blood groups and progression to oesophageal cancer: is nitric oxide the link? *European Journal of Gastroenterology and Hepatology*. 2011;23(9):801–806.[PubMed]

[12]. Narender Kumar, Akhil Kapoor, Ashok Kalwar, Satya Narayan, Mukesh Kumar Singhal, Akhender Kumar, Abhishek Mewara, and Megh Raj Bardia .Allele Frequency of ABO Blood Group Antigen and the Risk of Esophageal Cancer. Biomed Res Int. 2014

Table 1: Comparative data of etiological factors of Squamous cell and Adenocarcinoma

	Variables	Squamous cell Carcinoma(N=39)		Adenocarcinoma(N=11)		P value
		No	%	No	%	
Age (years)	30-50	10	25.64	0	0	0.089NS
	51-70	16	41.03	8	72.73	
	Above 70	13	33.33	7	63.64	
Gender	Male	25	64.10	4	36.36	0.19NS
	Female	14	35.90	7	63.64	
Rural/ Urban Area	Rural	16	41.03	5	45.45	0.93NS
	Urban	23	58.97	6	54.55	
Literacy level	Illiterate	10	25.64	3	27.27	0.95NS
	<10 th class	11	28.21	2	18.18	
	10-12 th class	8	20.51	4	36.36	
	Graduate and above	10	25.64	2	18.18	
Tobacco consumption	Tobacco chewing	7	17.95	3	27.27	0.65NS
	Smoking	3	7.69	0	0.00	
	Both	20	51.28	7	63.64	
	Tobacco sniping	5	12.82	1	9.09	
	Tobacco brushing	4	10.26	0	0.00	
Alcohol consumption	Alcohol consumption	33	84.62	7	63.64	0.26NS
Annual Family Income	0-25,000	10	25.64	2	18.18	0.79NS
	25,001-50,000	12	30.77	3	27.27	
	More than 50,000	17	43.59	6	54.55	

Table 2:Comparative analysis of the etiological factors of Squamous cell and Adenocarcinoma

GERD	Squamous cell Carcinoma(N=39)		Adenocarcinoma(N=11)		P value
	No	%	No	%	
Reflex 2-3/24 hours	5	12.82	2	18.18	1.0NS
Reflex 4-6/24 hours	9	23.08	2	18.18	
Reflex 6-8/24 hours	5	12.82	1	9.09	
No any reflex	20	51.28	6	54.55	
Relation with Plummer Vinson Syndrome	16	41.03	2	18.18	0.29NS
Caustic Injury	13	33.33	2	18.18	0.55NS
Achalsia	10	25.64	3	27.27	0.78NS
h/o Previous malignancy	5	12.82	2	18.18	0.96NS
h/o Previous radiotherapy	5	12.82	2	18.18	0.96NS

Table No 3: Association of blood groups with types of oesophageal carcinoma

Blood Groups	Squamous cell Carcinoma(N=39)		Adenocarcinoma (N=11)		Total(N=50)		P value
	No	%	No	%	No	%	
A	3	7.69	6	54.5	9	18	0.001S
O	16	41.03	5	45.5	21	42	
B	12	30.77	0	0	12	24	
AB	8	20.51	0	0	8	16	
Absence of B antigen	19	48.72	11	100	30	60	0.007S
presence of B antigen	20	51.28	0	0	20	40	

Figure :1 Clinical Presentations

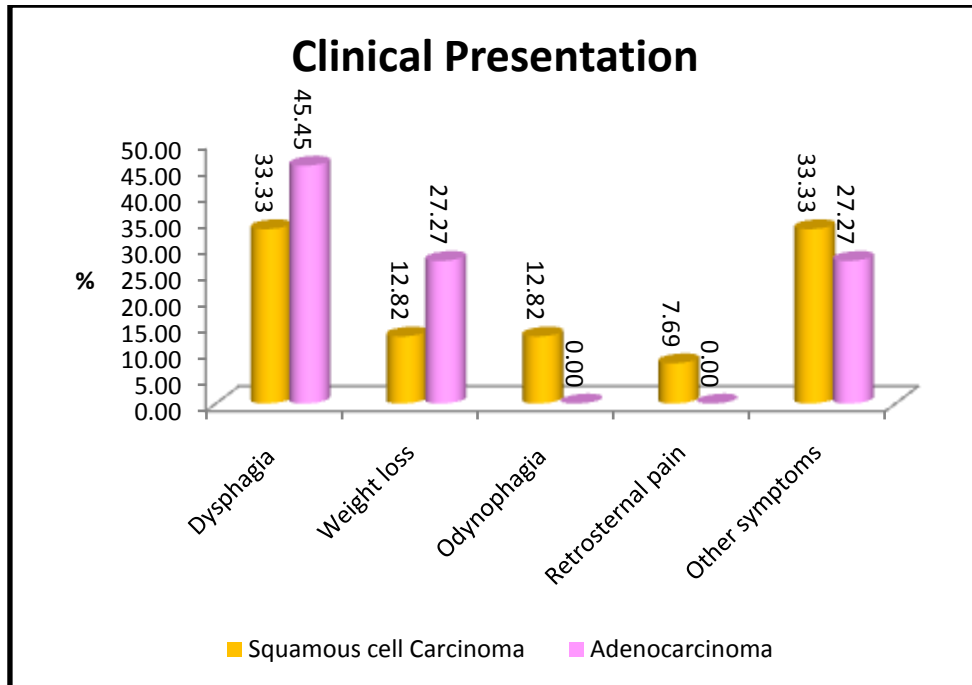


Figure:2 Blood group with type of carcinoma

