



A CROSS SECTIONAL STUDY ON HEAMATOLOGICAL VARIATIONS IN PATIENTS WITH SQUAMOUS CELL CARCINOMA

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Abstract:

Alteration in Hematological profiles among patients of SCC (squamous cell carcinoma) were suggested so this study was designed in a cross sectional style, conducted at department of pathology, Isra University hospital Hyderabad. Patients with all age groups having SCC of Gastro intestinal Tract and Female genital tract either gender were included. Hematological parameters were assessed and their association with severity of squamous cell was evaluated. The results were compared on SPSS Version22 for various variables. Total 126 patients were selected. Hb, haematocrit, MCV, MCH, RBC, Eosinophil, Platelet count were significantly affected with severity of SCC.

Conclusion: Squamous cell carcinoma was significantly associated with alteration in different haematological profile abnormalities.

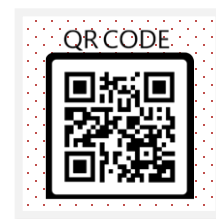
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INTRODUCTION:

Squamous cell carcinomas encompass a sum of various types of cancer that consequence from squamous cells. SCC is a major form of malignancy after basal cell carcinoma. SCC involve head and neck, vagina, cervix and prostate, urinary bladder, esophagus, & lung are further possible zones with its prevalence was 40,490 in united states of America in 2006[1]. The global prevalence outstrips 0.5 million cases per annually. Squamous cell carcinoma of upper part of Gastrointestinal tract is common in Mediterranean nations and east. In China and Taiwan, HNSCC, especially nasopharyngeal carcinoma is a commonest cause of mortality in young males [2]. More than 70% cancers of throat are at an unconventional stage and its prevalence is higher in Pakistan as well as South East Asian nations[3]. A commonest form of oral melanoma is SCC which is the histological form and constitute 90%-95% to 88.72%[4]. The Squamous cell malignancy of a number of body zones can exhibit variances in their symptoms, prognosis, history, & reaction to cure. SCC typically at first occurs in the sixth decade of life, however it is more common in 8th decade[5]. It is more common in men as compared to women. Anemia is a common sign occurring in more than 30% of cancer patients at diagnosis before the initiation of antineoplastic therapy. Anemia has a influence on survival, disease progression, treatment efficacy and the patient's quality of life[6]. There are several factors in malignancy which influence prognosis. Platelet count is inversely related to prognosis in various malignancy. High platelets were found to be correlated to tumour progression and poor survival in cancers. Platelets activation and thromboembolic events are known to occur frequently in cancers. Recent clinical data suggest that activation of platelets is a hallmark in the course of cancer by promoting neoangiogenesis, release of adhesion molecules and growth factors, all of these factors contribute to tumor growth and metastatic spread. Proinflammatory cytokine, mainly IL-6, which are released by both tumor and immune cells, play a role in development of anemia in cancer by promoting alterations in erythroid progenitor proliferation, erythropoietin (EPO) production, survival of circulating erythrocytes, iron balance and energy metabolism, all of which can lead to anemia. One of the main complications of cancer is anemia. Influence of anemia on the outcome of therapy is a deep-rooted fact. It has also been well known with other tumours like carcinoma of lungs, prostate, bladder and anus[67]. In addition, the leukocyte and platelet counts are also adversely affected by cancers which affect the quality of life. The strong apparent

correlation between Hb level, WBC and platelet count and survival supports consideration of correcting the hematological profile before initiation of radiation therapy[8].

METHODOLOGY:

This observational study was conducted in the department of pathology, of ISRA University Hospital. Cases were selected from ISRA University Hospital, Hyderabad and LUMHS. All the patients with all age groups having SCC of lower female genital tract, skin and upper aero digestive Tract, either of gender was included. All the patients with chronic comorbidities like skin infections, congenital haematological abnormalities and patients under treatment of chemotherapy were excluded.

The study objective was explained to the cases and consent was taken. After completing thorough examination blood complete picture was assessed. The blood sample of patient will be taken with aseptic measures. Patient's whole blood will be collected by venipuncture 3 ml in EDTA tube and sample was in heamatological analyzer Sysmex XN550. All the data was entered in the proforma.

Data was analyzed using SPSS version 22.0. Frequency and percentage was calculated for qualitative variables. Mean and SD were considered for quantitative variables. ANOVA test was applied for comparison of more than 2 quantitative variables. Statistical significance was taken at $p < 0.05$.

RESULTS:

In this study mean age of the patients was 55.52 ± 12.05 years, with range of minimum 23 years and maximum 80 years. RBC count was altering significantly as with severity and it more alter in moderately differentiated SCC p- value 0.00036. HB levels were decreasing significantly as severity was increasing of SCC p-value 0.00081. WBC count was not altered significantly with severity but they were on higher side with 8.50 ± 2.56 , 10.9 ± 3.52 and 9.74 ± 1.13 respective class p-value 0.00014. Platelet count was decreasing as severity of carcinoma was increasing although it was in normal range and had significant P value which is 0.00075. MCV (Mean corpuscular volume) also significantly reduced from well to poor category of SCC with values 80.8 ± 4.7 , 76.7 ± 3.6 and 70.5 ± 4.1 respectively and p-value was 0.000011. Hematocrit was reduced as well from 13.92 ± 1.7 of Well differentiated class to 13.4 ± 1.9 and 11.7 ± 2.1 of moderate and poorly differentiated class P-Value 0.00013. other detailed results are shown in table 01 and fig .01.

Table#1. Hematological Variables compared on ANOVA

Parameters	Well differentiated	Moderately Differentiated	Poorly Differentiated	F-Value	P-Value
RBCs	4.14±0.76	4.37±0.63	2.34±0.31	70.72	0.00036
MCV	80.8±4.7	76.7±3.6	70.5±4.1	42.12	0.000011
Hb%	10.79±1.23	9.84±1.89	7.80±1.46	24.93	0.00081
MCH	28.8±2.8	25.15±1.96	23.7±2.1	45.95	0.000012
MCHC	27.3±1.6	33.2±1.2	26.2±1.9	256.66	0.00000012
Hematocrit	13.92±1.7	13.4±1.9	11.7±2.1	9.64	0.00013
WBCs	8.50±2.56	10.9±3.52	9.74±1.13	9.53	0.00014
Eosinophils	0.8±0.1	0.11±0.2	1.0±2.1	14.14	0.00003
Platelets	275±36.85	245±39.79	201±27.70	28.35	0.00075

MCH normal 27-33, MCHC 33-36 , Hematocrit 12.5-15.5g/dl

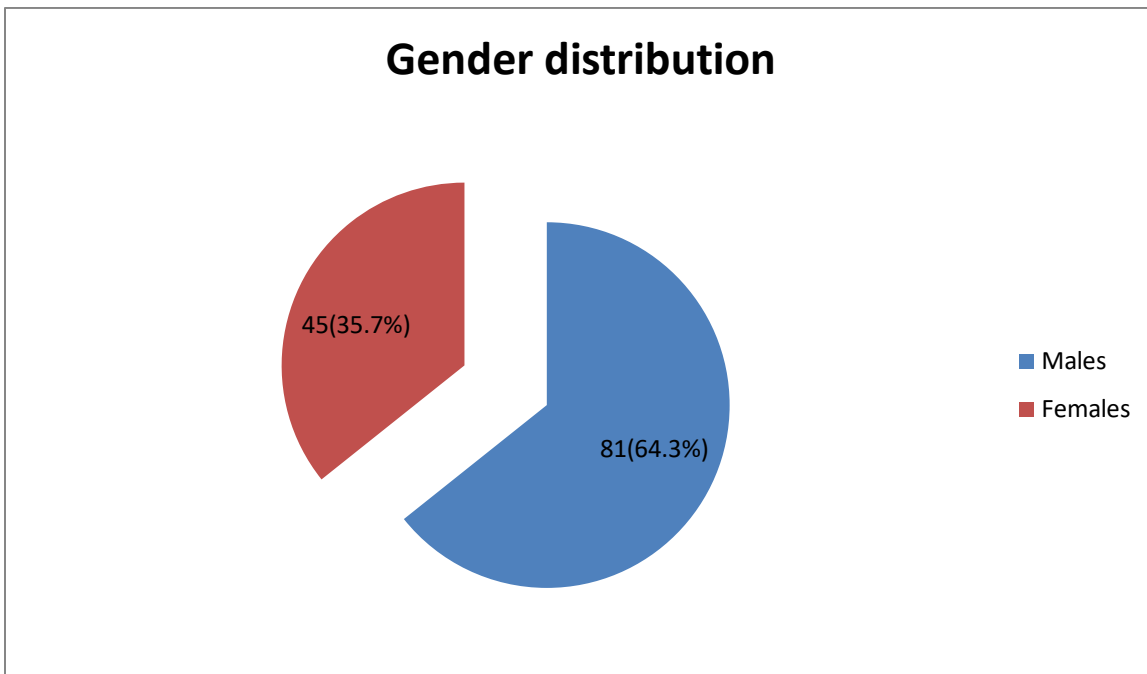


Fig.01 Pie chart of gender distribution in SCC patients

DISCUSSION:

In this study mean age and SD of the patients were 55.52 ± 12.05 years and male were found in the majority 81(64.3%) as compared to females 45(35.7%). The present study result are consistent with study conducted by Alamgir M et al[9] which showed that the mean age and SD of the patients in his study was 45.56 ± 12.08 years and male:female was 1.5:1. This can be due to the comparatively increased tobacco use in males than females in our society. In this study prevalence of well differentiated, moderately differentiated and poorly differentiated

SCC was found to be 42.1%, 40.5% and 17.5% respectively.

These results are parallel to the studies conducted by Muslim et al[10] and Fronie A et al[11], who reported that highest prevalence was of well differentiated SCC and lowest prevalence was of poorly differentiated SCC. However, these results are not in parallel with the findings by Alamgir M et al[9] who reported 50% cases in his study which were moderately differentiated squamous cell carcinomas. This can possibly be due to racial difference, life style and severity of SCC. In this study the

haematological profile was significantly altered with decreased RBC and Hb levels as well as decreased Platelet count. However, no significant change was seen in the WBC count. These results are consistent with the studies of S. Mercadante et al[12] and Ye X et al[13] who have reported that RBC count and Hb levels were decreased significantly in patients suffering from cancer. Similar results were also reported by Rades et al[14] who have also shown that anemia is a common outcome of cancer. These results are consistent with the study conducted by Harada H et al[15] who found thrombocytopenia in his study. However, author also observed leukopenia, the finding which is inconsistent with the present study. This may be because these patients were undergoing radiotherapy and chemotherapy, while our present study population was not. However, in the present study other hematological profile parameters such as WBC and platelet count were also assessed. The present study results regarding platelet volume are not consistent with studies conducted by Kannar V et al[16] and Park JW et al[17] who have reported increased mean platelets volume in oral SCC cases. This may be probably due to these patients who had received 1st line regimen of chemotherapy. In a study of Khatib W M et al[18] reported inconsistent findings as mean platelet volume in all the cases which were poorly differentiated was high and normal in moderate and poorly differentiated squamous cell carcinoma. Study conducted by Hefler L et al [19] who found consistent result that thrombocytosis and thrombocytopenia are associated with unfavourable prognosis. This may be due to platelet activation and thromboembolic events are known to frequently occur in cancer. The MCH decreased significantly in all the patients, thus indicating hypochromic anemia. This is due to the decreased hemoglobin content of a single red cell since MCH is the hemoglobin content of a single red cell. Patients in moderately differentiated SCC had a slightly elevated MCHC level, whereas patients in poorly differentiated SCC had low MCHC levels. However, MCHC levels are known to decrease only in advanced cases of iron-deficiency anemia and are normal in most cases of the early deficiency

CONCLUSION:

Different hematological parameters like HB, RBC, WBC and platelets count were altered with severity of Squamous cell carcinoma.

REFERENCES:

1. Khan F, Mahmalji W, Sriprasad S, Madaan S. Prostate cancer with metastases to the kidney: a rare manifestation of a common disease. *British*

2. Medical Journal (BMJ) case reports. 2013 Aug 1;2013:bcr2012008388.
2. Pytynia KB, Dahlstrom KR, Sturgis EM(2014). Epidemiology of HPV-associated oropharyngeal cancer. *Oral oncology*. 50(5):380-6.
3. Shaikh ah, Mohammad Qureshi(2014). histopathological patterns of oral squamous cell carcinoma. *Pakistan Oral & Dental Journal*.34(3).
4. Johnson MM, Leachman SA, Aspinwall LG, Cranmer LD, Curiel-Lewandrowski C(2017). Skin cancer screening: recommendations for data-driven screening guidelines and a review of the US Preventive Services Task Force controversy. *Melanoma management*.4(1):13-37.
5. Masago K, Fujita S, Mio T, Togashi Y, Kim YH, Hatachi Y(2011).Clinical significance of the ratio between the alpha 2 plasmin inhibitor–plasmin complex and the thrombin–antithrombin complex in advanced non-small cell lung cancer. *Medical Oncology*.28(1):351-6.
6. Smith SA, Travers RJ, Morrissey JH(2015). How it all starts: initiation of the clotting cascade. *Critical reviews in biochemistry and molecular biology*. 50(4):326-36.
7. Falanga A, Marchetti M, Vignoli A(2013). Coagulation and cancer: biological and clinical aspects. *Journal of Thrombosis and Haemostasis*. 11(2):223-33.
8. Tas F, Kilic L, Duranyildiz D (2014). Coagulation tests show significant differences in patients with breast cancer. *Tumor Biology*. 35(6):5985-92.
9. Alamgir M, Jamal Q, Jafarey NA, Mirza T(2013). Clinicopathological parameters of 50 oral squamous cell carcinoma cases in Karachi. *Pakistan Journal of Medicine and Dentistry*. 2(2):3-8.
10. Muslim khan, Shuja riaz ansari bd, rehmanuddin(2006). staging and grading of squamous cell carcinoma of the tongue. *Pakistan Oral & Dental*. 26 (2);275-80
11. Fronie A, Bunget AD, Afrem E, Preotescu LL, Corlan Puşcu D(2013). Squamous cell carcinoma of the oral cavity: clinical and pathological aspects. *Roman Journal of Morphology and Embryology* 54(2):343-8.
12. S. Mercadante, V. Gebbia, A. Marrazzo, S. Filosto (2000). Anaemia in cancer: pathophysiology and treatment *Cancer Treatment*. Revised., 26: 303-311
13. Ye X, Liu J, Chen Y, Wang N, Lu R(2015). The impact of hemoglobin level and transfusion on the outcomes of chemotherapy in gastric cancer patients. *International journal of clinical and experimental medicine*. 8(3):4228.

14. Rades D, Stoehr M, Kazic N, Hakim SG, Walz A, Schild SE and Dunst J(2008). Locally advanced stage IV squamous cell carcinoma of the head and neck: impact of pre-radiotherapy hemoglobin level and interruptions during radiotherapy. *International Journal of Radiation Oncology Biology Physics*70: 1108-14.
15. Harada H, Omura K(2010). Preoperative concurrent chemotherapy with S-1 and radiotherapy for locally advanced squamous cell carcinoma of the oral cavity: Phase I trial. *Journal of Experimental & Clinical Cancer Research*. 29(1):33.
16. Kannar V, Raja V, Suresh T(2017). Evaluation of platelet indices in oral squamous cell carcinoma. *Clinical Cancer Investigation Journal*. 6(1):40-.
17. Park JW, Kim CH, Ha YC, Kim MY, Park SM(2017). Count of platelet and mean platelet volume score: serologic prognostic factor in patients with oral squamous cell carcinoma. *Journal of the Korean Association of Oral and Maxillofacial Surgeons*. 43(5):305-11.
18. Oncel M, Kiyici A, Oncel M, Sunam GS, Sahin E, Adam B(2015). Evaluation of platelet indices in lung cancer patients. *Asian Pacific Journal of Cancer Prevention* 16:7599-602.
19. Eryilmaz A, Basal Y, Omurlu IK(2015). Can head and neck cancers be detected with mean platelet volume? *Asian Pacific Journal of Cancer Prevention* 16:7045-7.