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Research Article

SQUAMOUS CELL CARCINOMA: CROSS SECTIONAL EVALUATION AND COMPARISON OF THE RBCS, WBCS, PLATELETS COUNT AND HEMOGLOBIN BETWEEN VARIOUS GRADES

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Abstract:

SCC (squamous Cell Carcinoma) is widely distributed malignancy involving various body parts like skin, GIT and genitalia. It is graded on the bases of cell morphology as well, moderately and poorly differentiated. Current research work reflects changes in the blood cells e.g. Red Blood Cells, White blood cells and platelets along with the fluctuation in the hemoglobin concentration with the change of grade of this malignancy. So 126 known cases of SCC including both genders were selected with non-probability sampling out of which 59 were well differentiated, 50 were moderately differentiated and 17 were poorly differentiated. Blood Samples drawn from each patient was analyzed on systex N550 analyzer and count of the blood cells and Hb% was determined and compared on ANOVA using SPSS version 22.

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INTRODUCTION:

Squamous cell carcinoma occurs at various parts of the body including cervix, vagina, oral cavity, throat and the esophagus which has higher incidence in Asian countries specially China [1,2]. It has a 5 year survival rate of 15%-25% [3]. Oral SCC account for 90%-95% and has high prevalence in Pakistan [4, 5]. It is an established fact that inflammation has significant influence in the development of malignancies along with their progression as well as their metastasis [6]. Prognostic indicators based on inflammation e.g NLR (neutrophil-lymphocyte ratio) as well as PLR (platelet-lymphocyte ratio) have proven prognostic value in various malignancies including the SCC [7-10]. Malignancies including the SCC are frequently associated with anemia which profoundly affects the progression of disease, therapeutic effectiveness and the survival rate of patients [11]. There is inverse proportion between the Platelet count and the malignancy prognosis while leukocyte count is also affected in malignancy so hemoglobin concentration, white blood cells, platelets and red blood cell count must be considered before, after and during the therapeutic management [12]. Although much work has been done but still room is there to do more research studies about malignancy, inflammation and its therapeutic aspects [13]. This current study was managed to estimate various blood elements (Hemoglobin, RBCs, WBCs and Platelets) in different stages (well differentiated, moderately differentiated and poorly differentiated) of the SCC (Squamous Cell Carcinoma) in a cross – sectional manner and to compare these parameters among patients of these categories select from the two university hospitals of Hyderabad Sindh, Pakistan.

METHODOLOGY:

Patients of SCC were selected from LUMHS (Liaquat University of Medical and Health Sciences) hospital Jamshoro and Isra University Hospital Hyderabad signing written consent form. Cases were divided into three categories as SCC with well differentiation, moderate differentiation and poor differentiation. Blood samples were collected for blood complete picture under standard protocols. Data analysis of these variables was accomplished using SPSS version 22, on ANNOVA with P-value < 0.05 setting as level of significance

RESULTS:

Total 126 patients of SCC were found as 59(42.1%) well differentiated, 50(40.5%) as moderately differentiated and 17(17.5%) were from poorly differentiated SCC figure#1. The mean with S.D for RBCs count in well differentiated SCC was $4.14 \pm 0.76 \times 10^{12}$ while it was $4.37 \pm 0.63 \times 10^{12}$ in moderately differentiated SCC where as it much low $2.34 \pm 0.31 \times 10^{12}$ in poorly differentiated SCC (P-0.00036). Hemoglobin concentration observed as 10.79 ± 1.23 gm/dl in patients with well differentiated SCC, slight reduced Hb% was seen as 9.84 ± 1.89 gm/dl in subjects having moderately differentiated SCC where as severe anemia was seen Hb% 7.80 ± 1.46 gm/dl in poorly differentiated SCC cases (P-0.00081). WBCs count as measured in well differentiated SCC patients was $8.50 \pm 2.56 \times 10^3$ /ul, $10.9 \pm 3.52 \times 10^3$ /ul and $9.74 \pm 1.13 \times 10^3$ /ul in moderately and poorly differentiated SCC patients respectively (P-0.00014). Platelets count was $275 \pm 36.85 \times 10^3$ /ul, $245 \pm 39.79 \times 10^3$ /ul and $201 \pm 27.70 \times 10^3$ /ul in well, moderately and poorly differentiated SCC patients respectively (P-0.00075) Table#1.

Table#1 showing statistical analysis of study variables compared using 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
Hb%	10.79 ± 1.23	9.84 ± 1.89	7.80 ± 1.46	24.93	0.00081
WBCs	8.50 ± 2.56	10.9 ± 3.52	9.74 ± 1.13	9.53	0.00014
Platelets	275 ± 36.85	245 ± 39.79	201 ± 27.70	28.35	0.00075

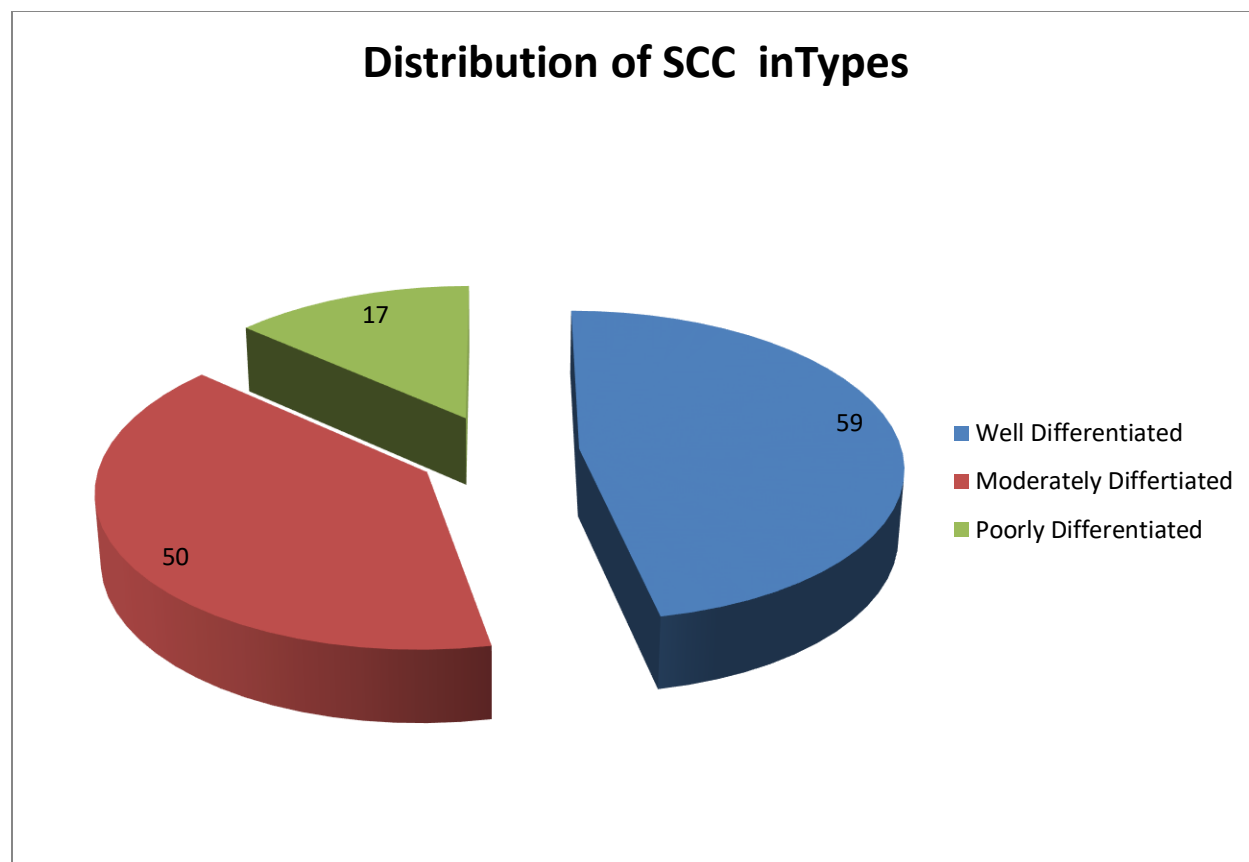


Figure #01: Pie chart showing percentage of various stages (grades) of SCC in study subjects

DISCUSSION:

Fronie A et al(2013) also reported well differentiated type of SCC to be highest in his study subjects while the poorly differentiated type of SCC as lowest so his results are in accordance with current findings[14]. Inconsistent to our findings were findings by Alamgir M et al (2013) with majority of study patients (50%) were having moderately differentiated SCC [15]. These variations in results may be due to regional differences or etiology differences or the site and location of the lesion. Consistent work was published by Ye X et al (2015) for RBCs and level of Hb% in SCC patients we also found both reduced [16]. Normal range of RBCs is $4.2-5.5 \times 10^{12} / \text{ul}$ that sequentially got reduced to $2.34 \pm 0.31 \times 10^{12}$ in the current study specially in the poorly differentiated category of the SCC patients which seems to be multifactorial in origin. Regarding platelet count consistent reports were described by Harada H et al (2010) with study population suffering from thrombocytopenia [17]. Platelets count ranges between 150 to $450 \times 10^3 / \text{ul}$ normally but this gets reduced in SCC as well as other malignancies leaving a poor prognostic clue in our recent work it got reduced from $275 \pm 36.85 \times 10^3 / \text{ul}$ of well differentiated to $201 \pm 27.70 \times 10^3 / \text{u}$ of poorly differentiated SCC.

Although it remained in the normal ranges limits. Although many other aspects could have been covered but we restricted our work due to certain limitations leaving space for other co-workers. Hope this study will provide a pavement to other research colleagues.

CONCLUSION:

There are significant differences between hematological parameters in various stages of SCC.

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