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EVALUATION OF HAEMATOLOGICAL PARAMETERS OF PATIENTS WITH LYMPHADEMA IN SOUTHEAST, NIGERIA

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ABSTRACT

This study was conducted to evaluate the haematological parameters of patients with lymphedema in Southeastern Nigeria. Fifty (50) subjects each for patients with lymphedema ad apparently healthy individuals were selected for the study using purposive sampling technique. The full blood count (FBC) was determined using automation method of Mindray BC-5300. The data collected were analysed using student t-test of SPSS version 20 and significance level set at $P<0.05$. The results showed increase in WBC ($p=0.006$) and platelets ($p=0.004$), decrease in haemoglobin ($p=0.043$), MCHC ($p=0.025$), MCV ($p=0.032$) and no significant difference in Neutrophils ($p=0.086$), Lymphocytes ($p=0.094$), Monocytes ($p=0.519$), Eosinophils ($p=0.116$) of the lymphadema compared to the apparently healthy individuals. The study revealed that there were changes in WBC, red cells and red indices together with the platelets which shows that the bone marrow may be infiltrated and affect the blood cell.

Keywords: *Lymphadema, Haematological parameters, lymphatics, red cell indices, Enugu*

Introduction

Lymphedema is a chronic disease that is indicated by an increased accumulation of lymph in the body, causing swelling that can cause changes in the skin and tissues. The long-term, progressive accumulation of protein-rich fluid in the interstitial and fibrous adipose tissue exceeds the ability of the lymphatic system to transport fluid. Swelling associated with lymphedema can occur anywhere on the body, including the arms, legs, genitals, face, neck, chest wall, and oral cavity. Lymphedema is classified as either primary or secondary lymphedema (Rockson and Rivera, 2008). The incidence of lymphedema has been extensively studied in the oncology population. Lymphedema develops in 1 in 5 women who have overcome breast cancer (DiSipio *et al.,* 2013). Head and neck cancer can cause lymphatic and soft tissue complications during the first 18 months after treatment, with more than 90% of patients having some form of internal or external lymphedema. , Or have experienced complex lymphedema. More than half of these patients develop fibrosis (Ridner *et al.,* 2016).

There is no definitive cure for lymphedema, but its progression and potential complications can be well managed with proper diagnosis and treatment (Grada and Phillips, 2017). Dramatic changes in haematological parameters were so detrimental to patients that hematological parameters are a useful indicator of health and are needed to conduct studies in patients with lymphedema. Increase. Early detection and treatment of lymphedema is the key to saving complications. Patients received appropriate guidance and counseling before agreeing to participate in the study. This study was conducted to evaluate the haematological parameters of patients with lymphedema in southeastern Nigeria.

Keywords: *Haematological parameters, lymphedema, red cell indices, primary and secondary lymphedema, orthopaedic*

Materials and Methods

Study area

The study was done in Enugu Metropolis using National Orthopaedic Hospital, Enugu as the study site.

Study design

The study involved hospital based cross sectional purposive sampling of the lymphedema patients and apparently healthy adults who visited the hospital for other purposes.

Subjects

Fifty (50) subjects each for patients with lymphedema ad apparently healthy individuals were selected for the study using purposive sampling technique.

Ethical considerations

The details of the research which does not involve administration of drug were explained to the subjects and allowed to join willingly or withdraw at any stage. The confidentiality of the results and consents were obtained from the subjects before any sample was collected from the subjects.

Laboratory investigations

The full blood count (FBC) was determined using automation method of Mindray BC-5300

Statistical analysis

The data collected were analysed using student t-test of SPSS version 20 and significance level set at P<0.05

Results

Table 1: Haematological parameters of lymphadema patients compared to apparently healthy individuals

Parameters	Control	Lymphadema	t-value	p-value
WBC (X 10^9/L)	4.63±0.35	6.07±0.31	-5.333	0.006*
Neutrophil (%)	67.67±2.52	72.33±2.52	-2.271	0.086 ^{NS}
Lymphocytes(%)	28.33±2.08	23.67±3.06	2.186	0.094 ^{NS}
Monocytes(%)	2.67±0.58	2.33±0.58	0.707	0.519 ^{NS}
Eosinophil(%)	1.33±.0.58	2.00±0.00	-2.000	0.116^{NS}
Haemoglobin (g/dl)	13.00±1.00	10.93±0.70	2.929	0.043*
PCV (%)	40.00±2.00	32.67±2.52	3.951	0.017*
MCHC (g/dl)	34.33±0.58	32.00±1.00	3.500	0.025*
MCV(fl)	87.33±2.52	80.67±2.52	3.244	0.032*
Platelets(X 10^9/L)	210.00±36.06	333.00±5.57	-5.840	0.004*

The results showed increase in WBC (6.07±0.31 X 10^9/L, 4.63±0.35 X 10^9/L, p=0.006) and platelets (333.00±5.57 X 10^9/L, 210.00±36.06 X 10^9/L, p=0.004), decrease in haemoglobin (10.93±0.70 g/dl, 13.00±1.00 g/dl, p=0.043) , MCHC (32.00±1.00 g/dl, 34.33±0.58 g/dl, p=0.025), MCV (80.67±2.52 fl, 87.33±2.52fl, p=0.032) and no significant difference in Neutrophils (72.33±2.52%, 67.67±2.52%, p=0.086), Lymphocytes (23.67±3.06%, 28.33±2.08%, p=0.094), Monocytes (2.33±0.58%, 2.67±0.58%, p=0.519), Eosinophils (2.00±0.00%, 1.33±.0.58%, p=0.116) of the lymphadema compared to the apparently healthy individuals respectively.

Discussion

The results showed increase in WBC (p=0.006) and platelets (p=0.004), decrease in haemoglobin (p=0.043), MCHC (p=0.025), MCV (p=0.032) and no significant difference in Neutrophils (p=0.086), Lymphocytes (p=0.094), Monocytes (p=0.519), Eosinophils (p=0.116) of the lymphadema compared to the

apparently healthy individuals. The results revealed decrease in all the red cell indices, increase in WBC and platelets and no changes in the differential counts of the lymphaedema patients compared to apparently healthy individuals. The changes affects red cells and red cell indices more. Lymphadema affects the lympactic system and could affect the haematological parameters (Andraska *et al.,* 2016; Slater *et al,* 2013). These variations may be linked to suppression of bone marrow under such haemtological aberrations.

Conclusion

The study revealed that there were changes in WBC, red cells and red indices together with the platelets which shows that the bone marrow may be infiltrated and affect the blood cell.

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