**Abstract**

**Introduction:**

Lymphoma is a group of malignant disorders it starts in B, and T lymphocytes, and Natural killer cells, which are type of the white blood cell, play an essential role in the body's immunological system, these malignant cells collect in the lymph nodes and cause characteristic lymphadenopathy, they frequently have the potential to leak into circulation or invade organs beyond the lymphatic system, the major subdivisions of lymphoma are Hodgkin and Non-Hodgkin lymphoma, lymphoma most commonly affect cervical lymph nodes, and may remain grow and wane for several months, furthermore lymphadenopathy may be the only manifestation of lymphoma. the objectives are to evaluate the oral health of newly diagnosed patients with Hodgkin and Non-Hodgkin lymphoma before treatment starting and the gray-scale ultra-sound parameters of the involved lymphomatous cervical lymph nodes in newly diagnosed patients with Hodgkin and non-Hodgkin lymphoma before treatment starting and that of normal cervical lymph nodes in control group, the present study is designed to: determine the oral manifestations in newly diagnosed Hodgkin, and Non-Hodgkin Lymphoma patients. The differences in gray-scale ultra-sonographic parameters of the involved lymph nodes in the Hodgkin, Non Hodgkin Lymphoma, and control groups. The gray-scale ultra-sonographic parameters of lymphomatous cervical lymph nodes that predict occurrences of Hodgkin, and Non Hodgkin lymphoma. finally estimate the cutoff points of the long axis, short axis, and short/long axis ratio of the involved cervical lymph nodes in the Non-Hodgkin and Hodgkin Lymphoma groups in relation to the control group.

**Subjects, materials, and methods :**

The study sample includes (25) Hodgkin Lymphoma patients, and (25) Non-Hodgkin Lymphoma patients, both associated with cervical lymphadenopathy, and 25 healthy

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control group with normal cervical lymph nodes, without a history of neck surgery, glandular fever, chronic, tonsillitis, tuberculosis, and head and neck malignancy,

or lymphomas, Age, and sex matched within the studied groups, oral manifestations have been recorded for the both groups before treatment starts, so that for gray-scale sonographic parameters of cervical lymph nodes with Voluson Ultrasound Machine, normal cervical lymph nodes of the control group examined for the same songraphic parameters with Voluson Ultrasound Machine.

**Results :**

Oral findings: the pale oral mucosa, gingival inflammation, atrophic glossitis, recurrent aphthous stomatitis, and angular cheilitis presented with significant relationship toward the low percentage of occurrences in the diseased groups.

Concerning to gender of the studied groups, there was no significant relationship at P>0.05 between studied grous, with the Hodgkin lymphoma group which recorded an increase in female patients, while male patients were the highest registered in the Non-Hodgkin lymphoma group, the distribution of the age classes in the studied groups had a significant difference at P<0.01, the percentage of age in Hodgkin lymphoma group (15-35) years was (64%), while Non-Hodgkin lymphoma group presented mostly over 40 years {40\_ (24%), 50\_ (28%), and (60- 70) years (20%), there was a significance at p<0.01 in relation to the subtypes of the Non-Hodgkin lymphoma which presented with 40% diffuse large B-cell lymphoma, 12% peripheral T-cell lymphoma, 12% marginal zone lymphoma, and the subtypes of Hodgkin lymphoma which presented with 84% classic Hodgkin lymphoma, 16% nodular lymphocyte predominant Hodgkin lymphoma, also there was significance regarding stages at the time diagnosis at p<0.05, that the Non-Hodgkin lymphoma patients mostly diagnosed with third–forth stage, while

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Hodgkin patients at first–third stage. Regarding site of involvement, there was no significance at p>0.05 in the distribution of site of involvement among studied groups.

Regarding the shape (round), absent fatty hilum, homogeneity (homogenous), lymph node status (matted), echogenic pattern (reticular) presented with significant presentation in Non-Hodgkin and Hodgkin lymphoma groups more than the control group, while no significance between diseased groups, with matted lymph nodes cases in Non-Hodgkin lymphoma group more than that in Hodgkin lymphoma group. Cysticnecrosis (present) presented with significant presentation in Non-Hodgkin lymphoma group more than that in the leftover groups. Nodal border **(**regular**)** presented significantly in Non-Hodgkin lymphoma more than that in the leftover groups, with a percentage of (68.9%) in Hodgkin lymphoma to be informative. Hyperechoic echogenic pattern presented with significant presentation in the control group more than that in diseased groups. Other parameters: site of involvement, coagulation necrosis, internal calcification, hypoechoic and isoechoic echogenic pattern presented with no significant relation among studied groups, Means of the long axis, and short axis of cervical lymph nodes in Non-Hodgkin lymphoma group were (21.47mm, 13.23mm ) and for Hodgkin lymphoma (23mm, 13.59mm) and presented with significant relation in contrast to healthy subjects (9.08 mm, 3.85 mm), so that for means of short/long axis ratio (0.634, 0.601, 0.424) mm respectively. Cutoff points for long axis of the Non-Hodgkin, and Hodgkin lymphoma groups in contrast to control group was 13.85mm, while they were (5.800 and 7.150) mm for short axis, and (0.540 and 0.447) mm for short/long axis ratio respectively, that presented with strong diagnostic strength to diagnose Non-Hodgkin, and Hodgkin Lymphoma.

**Conclusion :**

1. Oral manifestations could not present early in Non-Hodgkin, and Hodgkin lymphoma patients.

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1. Hodgkin lymphoma was more prevalent in female patients, while the prevalence of Non-Hodgkin lymphoma was higher in male patients, the most common subtype of Non-Hodgkin lymphoma was the diffuse large B-cell lymphoma and for Hodgkin lymphoma was the classic Hodgkin lymphoma, the Non-Hodgkin lymphoma group mostly diagnosed with third–forth stage, while Hodgkin lymphoma group at first–third stage.
2. Gray-scale ultrasound parameters of cervical lymph node:

* the shape (round), fatty hilum (absent), status in relation to adjacent tissue (matted), homogeneity (homogenous), echogenicity (reticular pattern), cutoff points of long axis, short axis, and short/long axis ratio were strong diagnostic indicators to predict the occurrence of Non-Hodgkin, Hodgkin lymphoma, while no difference obtained between diseased groups regarding the gray-scale ultra-sound parameters above, with more presented matted lymph nodes in Non Hodgkin than Hodgkin lymphoma group.
* lymph node border (regular) was diagnostic feature in Non-Hodgkin lymphoma group, while for Hodgkin lymphoma group it is informative in contrast to control group.
* Cystic necrosis (present) was diagnostic indicator to the Non-Hodgkin lymphoma group, while fewer cases presented in the Hodgkin lymphoma group.
* Coagulation necrosis, internal calcification, echogenicity (hypoechoic pattern, isoechoic pattern) were presented with no difference between the studied groups.
* Sites of involvement mostly presented at the left supraclavicular (Virchow), submandibular, middle cervical, upper cervical, right supraclavicular, parotid, lower cervical, posterior triangle, and submental cervical regions respectively.

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* Cutoff points of long and short axis of 13.85mm, 5.8 mm strong indicator for NHL occurrence, while 13.85mm, 7.15mm strong indicator for HL occurrence