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College of Dentistry**



**Oral Health Status and selected Salivary
Physicochemical properties among A group of
Patients with Acute Lymphocytic Leukemia
Receiving Chemotherapy
(Follow-up Study)**

Submitted to the Council of the College of Dentistry at
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ABSTRACT

Background: Acute lymphoblastic leukemia is fast growing cancer of the white blood cell. Chemotherapy which has been used to treat malignant conditions has a negative impact on oral health condition among cancer patients.

Aims of the study: this observational study was conducted to estimate the level of selected salivary physicochemical characteristics (flow rate, total antioxidant, uric acid and albumin), and to study the oral health status (gingival health condition, dental plaque and oral mucositis) among a group of patients with acute lymphoblastic leukemia.

Materials and methods: The present study included thirty patients with acute lymphoblastic leukemia aged (14-17) years old. Those patients were admitted to the Hematological Center at Baghdad Teaching Hospital. All patients fulfilled certain inclusion criteria. Salivary sample collection and oral examination were carried out at three visits: the first visit was carried out before receiving chemotherapy (at the day of admission), while the second visit was carried out at the day 15 (after starting chemotherapy), and the third visit was done at the day 30 (after starting chemotherapy). Stimulated salivary samples were collected following instructions cited by Tenovuo and Lagerlof (1994) and salivary flow rate was determined. Oral mucositis was assessed following the WHO (1979) grading system. While dental plaque was assessed according to criteria of plaque index by Sillness and Loe (1964) and gingival health condition was assessed according to the criteria of Modified Gingival Index for Lobene et al (1986). Salivary samples then were chemically analyzed for the detection of salivary constituents (total antioxidant, uric acid and albumin).

Results: In this study, Salivary flow rate decreased with time (visits) (1.44 ± 0.14 , 1.27 ± 0.16 , 1.02 ± 0.53) with statistically highly significant differences ($p < 0.01$).

Regarding oral mucositis, there was an increase in the occurrence and severity of oral mucositis at the third visit compared with the second one. The mean values of plaque and gingival indices increased with time (visits) (0.89 ± 0.39 , 1.22 ± 0.58 , 1.82 ± 0.75) (0.98 ± 0.49 , 1.13 ± 0.46 , 1.38 ± 0.84) respectively and the differences were statistically highly significant ($p < 0.01$). The mean values of salivary total antioxidant decreased with time (visits) (0.94 ± 0.25 , 0.92 ± 0.21 , 0.82 ± 0.21) with statistically significant differences ($p < 0.05$). On the other hand, salivary albumin and uric acid levels increased with time (visits) (0.20 ± 0.12 , 0.27 ± 0.11 , 0.38 ± 0.17) (2.65 ± 0.16 , 2.73 ± 0.17 , 2.84 ± 0.24) respectively with statistically highly significant differences ($p < 0.01$).

Conclusion: Acute lymphoblastic leukemia, its treatment and duration of therapy have direct and indirect impact on the oral health status of leukemic patients. Those patients had poor oral hygiene with high rates of gingivitis and oral mucositis with change in salivary physicochemical properties, thus an organized, comprehensive oral health preventive and educational programs in addition to intense oral hygiene program before and during the first month of treatment with cytotoxic drug (chemotherapy) are essential to improve their oral health condition and prevent oral complications.