

### **Dedication**

I dedicate this research to my father who encourages me to the road of success and happiness to my kind and lovely mother who taught me the meaning of life.

To my brothers, sister, relatives and my dear friend Mohammed AbdAlrahman.

## **Acknowledgement**

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## الخلاصة

اجريت هذه الدراسة التحليلية فى مدينة الخرطوم فى الفترة ما بين نوفمبر 2009م الي ابريل 2010م . هدفت الدراسة الى تقييم النشاط الخليوى الإستشارى فى بطانة الفم لمستخدمى التمباك باستخدام الطرق الخليويه: صبغة بابانيكول, حساب النقاط النظميه النوويه, حساب معدل الأنويه الدقيقه وصبغة البنفسج الكريستالى .

تم جمع المسحات الخليويه من المكان الذى يوضع فيه التمباك فى بطانة الفم لمستخدمى التمباك وشملت الدراسة (210) مشاركا, منهم (100) مستخدمى التمباك (حالات) و(100) من غير مستخدمى التبغ كفته ضابطه وعشرة مرضى بسرطان الفم لضبط الجودة فى الدراسة وتتراوح اعمارهم ما بين (16 الى 94) سنه بمتوسط عمر 33 سنه. متوسط اعمار الحالات 34 سنه ومتوسط اعمار الفئة الضابطه 32 سنه.

اظهرت الدراسة وجود حالات شذوذ خلوي فى خلايا بطانة الفم ل 4 من مستخدمى التمباك وعدم وجود هذا الشذوذ فى الفئة الضابطه (ب) ( $0.04 >$ ). ووجدت حالة التقرن فى 32 (32%) من الحالات واثنين فقط (2%) من الفئة الضابطه كما وجد التهاب فى 13 (13%) من الحالات واثنين فقط (2%) من الفئة الضابطه ووجدت البكتيريا فى بطانة الفم فى 21 (21%) من الحالات و 4 (4%) من الفئة الضابطه كما وجدت عدوى المونيليا فى 4 (4%) من الحالات ولم توجد فى الفئة الضابطه. التمباك هو السبب الاساسى لوجود حالة التقرن فى خلايا بطانة الفم لمستخدمى التمباك وان مستخدمى التمباك اكثر عرضة للعدوى والالتهابات فى الفم نتيجة للتقرحات والتعريه التى تحدث (لبطانة الفم من اثر التمباك (ب) ( $0.003 >$ ).

وجد ان متوسط النقاط النظميه النوويه لمستخدمى التمباك (2.423) احصائيا اكثر مما وجد فى الفئة الضابطه (1.303) (ب) ( $0.0001 >$ ). كما وجد ان متوسط معدل الانويه الدقيقه لمستخدمى التمباك (1.026) اكثر مما وجد فى الفئة الضابطه (0.356) (ب) ( $0.0001 >$ ). لوحظ ان متوسط النقاط النظميه النوويه ومتوسط معدل الانويه الدقيقه لمستخدمى التمباك يزيد بزيادة فترة التعرض للتمباك وعدد مرات استخدام التمباك فى اليوم (ب) ( $0.0001 >$ ). كما وجد ان متوسط النقاط النظميه النوويه يزيد بزيادة كمية التمباك التى توضع فى بطانة الفم عند الاستخدام (ب) ( $0.062 >$ ). وجد ان حالات التقرن فى خلايا الفم مرتبطه احصائيا بزيادة متوسط النقاط النظميه النوويه ومتوسط معدل الانويه الدقيقه (ب) ( $0.0001 >$ ). اظهرت الدراسة ان وجود الالتهابات فى بطانة الفم تزيد من متوسط النقاط النظميه النوويه (ب) ( $0.006 >$ ). كما وجد ان التقدم فى العمر يزيد متوسط النقاط النظميه النوويه ومتوسط معدل الانويه الدقيقه وظهور التقرن فى (الخلايا (ب) ( $0.001 >$ ).

لم يلاحظ ظهور فقرات الانقسام النووى لا فى الحالات ولا فى الفئة الضابطه. نتائج هذه الدراسة تدعم ان التمباك عامل على الخطوره فى التأثير على الخلايا المخاطيه

للفم وان الطرق الخليويه المستخدمه لقياس النشاط الخلوى الاستثارى ذات قيمه فى  
. مسح وتقصى التغيرات الخلويه للفم لمستخدمى التمباك

## **Abstract**

This is a retrospective case control cohort study; cellular proliferative activity of Toombak dippers oral epithelium was assessed applying Papanicolaou method, mean AgNOR counts, micronuclei frequency and 1% Crystal Violet stain. The study was conducted in Khartoum state during the period from November 2009 to April 2010. Oral scrapes smears were obtained from 210 participants of whom 200 were apparently healthy individuals; 100 were Toombak users (cases); 100 were non-tobacco users (controls) and ten were patients with Oral Squamous Cell Carcinoma (OSCC), as an internal control group. Their ages ranging from 16 to 94 years; with a mean age 33 years old. The mean age for the cases was (34 years); hence, the mean age for the controls was (32 years).

Cytological atypia was identified among four (4%) Toombak users hence, no cytological atypia was found among control group. Of the four cases with cytological atypia, only one case was identified with moderate degree of cytological atypia and the remaining three were categorized as having mild degree of cytological atypia ( $p < 0.04$ ). Thirty two (32%) subjects from the cases were identified with keratinization; hence, only two subjects from the control group were identified with keratinization. Toombak dipping is a risk factor for occurrence of the keratinization in the oral mucosa ( $P < 0.0001$ ). Thirteen (13%) and two (2%) of the subjects are identified with inflammation in cases and control groups respectively. In regard to the infections, twenty one (21%) and four (4%) of the cases were identified with bacterial infection and moniliasis, respectively, since three (3%) of the control group identified

with bacteria. Cases were more susceptible to the inflammation and infection than control group, erosions and exposure of oral mucosa to Toombak irritation are the major causative factors ( $P < 0.003$ ).

The mean AgNOR counts in the cases was (2.423) was statistically higher than control groups (1.303) ( $P < 0.0001$ ). In regard to the mean of the micronuclei frequency per 1000 buccal cells, the micronuclei frequencies were higher in the cases group (1.026) than in control group (0.356) ( $P < 0.0001$ ). The mean AgNOR counts and micronuclei frequency was statistically increased with the prolonged and frequent use of Toombak ( $P < 0.001$ ). However, there was increasing in the mean AgNOR counts in those snuffing large amount of Toombak per dip (relatively statistically significant;  $p < 0.062$ ).

The keratinization presence was associated with the increasing of the mean AgNOR counts and micronuclei frequency ( $p < 0.0001$ ). In regard to the presence of inflammation the AgNOR counts were statistically associated with increased inflammation infiltrate ( $p < 0.006$ ). Increasing of the age in the study population was statistically associated with increasing of the mean AgNOR count, micronuclei frequency, and keratinization ( $p < 0.001$ ). Neither cases group nor control group were found with mitotic figures in 1% crystal violet stain method. This findings support that, Toombak dipping is a high risk factor to increase the cellular proliferation in the oral mucosa and the cytological proliferative markers methods are useful for screening the Toombak users.