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Research Article

**USE OF TOLUIDINE BLUE FOR EARLY DIAGNOSIS OF
ORAL CANCER****¹Dr. Muhammad Waleed Ghous, ²Dr Muhammad Mushhood Ur Rehman,
³Dr Sanabil Anwar**¹House Officer DHQ Teaching Hospital Mirpur AJK, ²House Officer Services Hospital Lahore,
³University of Medical and Dental College Faisalabad.**Article Received:** September 2019 **Accepted:** October 2019 **Published:** November 2019**Abstract:**

Background: One of the very common cancer in the whole world is oral cancer (OC) and its incidence depends upon the geographic regions. There is variation in the rate of the occurrence of this very cancer from very low in Japan to 43.0% in the country of Sri Lanka, India, Nepal & when compared with the cancers of other body parts. In our country Pakistan, oral cancer constitutes 8.0% malignant tumors standing next to the bronchogenic carcinoma in men and breast carcinoma in women. Better prognosis depends upon the early detection and in time treatment of this complication.

Purpose: The purpose of this research prospective research work was to assess the use of the Toluidine Blue for the early identification of the oral cancer.

Methodology: Patients suffering from oral abrasions with no clinical proof of the oral cancer, but appearing as non-curative oral ulcers greater than six months or increased margins were the parts of this research work. These patients were from age groups and from both genders. Toluidine Blue was in use for the staining of the abrasion and we took the biopsy from region under staining, in most of the patients from more than one single place. The selection of the patients carried out randomly.

Results: Histopathological findings discovered the Squamous Cell Carcinoma in 10 patients and dysplasia in 3 patients.

Conclusion: Toluidine Blue is useful as an aid for in time diagnosis of the oral cancer.

Keywords: Oral Cancer, Toluidine Blue, Abrasions, Malignant, Carcinoma, Squamous Cell Carcinoma.

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INTRODUCTION:

One of the most common cancer is oral cancer with a variation of occurrence in various regions of the world. The range of the frequency of this cancer varies from very low in Japan to 43.0% in the countries of Sri Lanka, India, Nepal & Pakistan in comparison with the other cancers of human body. OC constituted 8.0% of the malignant tumors standing 2nd only to bronchogenic carcinoma in men and breast carcinoma in women. A research works conducted in the supervision of oncologist displayed that approximately 18.0% cancers checked at departments of ENT and oncology were the malignancies of oral cavity. The vitality of the in time diagnosis in oral malignancies, as definitely in all tumors of body can be emphasized hardly.

There can be improvement in the rate of survival if there is early diagnosis in T-stage of this problem. The experts in the field of cancer are agree that timely identification of the oral cancer highly enhances the possibility of the treatment with minimum deformity and impairment. The site and the presentation of the oral abrasions does not always support the timely identification.

The appearance displays that the timely diagnosis of the majority of the abrasions is possible when they are symptomatic. Physicians may fail to identify the

patients with great danger to develop oral carcinoma and there can be overlooking to the presentation of the early squamous cell carcinoma in oral cavity. Until recent time, physicians have depended on the medical assessment and non-specific visual proofs to make a decision from and when biopsy to be obtained from the suspected abrasion. Toluidine Blue 1.0% permits the physician to high reliably assess the locations with high risk in the oral cavity. The monotonous usage of the Toluidine 1.0% on the patients with high danger will support the timely detection and the overall procedure of the treatment.

METHODOLOGY:

We used a 3 components system for scan of oral cavity in this research work, 1 component got the flavor 1.0% Toluidine Blue solution. The remaining 2 components are pre and post rinse-solutions comprising with flavor of 1.0% acetic acid as presented in Figure-1. Basically Toluidine Blue is meta-chromatic stain when it is in use for histological examination. We found no evidence about the chemical reaction with any of the cell component. The patients present with the oral abrasions having no medical proof of the oral cancer appeared as non-healing oral ulcers, for greater than 6 months or increased margins were the part of this research work. Traumatic abrasions & charges of oral inflammation were not the part of this research work to prevent the false positive outcome.



Figure 1

The patients of this research work were from all age groups and from both genders. We carried out the oral scanning after the complete examination of the neck and head. We carried out the visual assessment of the oral cavity prior to any instrumentation of the soft tissues to identify any injury to the soft tissues. Instrumentation can be the reason of the cuts in the oral cavity which can hold some of the material used for

staining and it can lead to some false positive outcomes.

We provided the clothing to the patients with a bib. As there was requirement of the expectoration, we positioned the patients near the sink. The adaptation of following procedures carried out for the staining as The oral cavity of the patients rinsed with about one half of contents of oral scan before rinse (Bottle-1) for

twenty seconds and then expectorated. This solution provided a consistent environment of the oral cavity. Subjects got rinse from water for complete twenty seconds & then expectorated. Subjects gargled with one half of oral scan solution of Toluidine Blue (Bottle-2) for complete sixty seconds and then expectorated. Patients got rinse with oral scan after rinse solution (Bottle-3) for complete twenty seconds and then expectorated. We repeated this step with the lasting solution. Then we rinsed the patients with the water. We also repeated this step. We made the observations with proper examination techniques of the soft tissues of the oral with the retraction. We recorded the morphology, site, size, color & traits of surface of suspected abrasions that have retained blue color after staining. We included total one hundred patients in this research work in which 30 patients

displayed positive stain. We took the biopsy from the stained region.

RESULTS:

Histological findings discovered squamous cell carcinoma in 10 patients & dysplasia in 3 patients, remaining patients were negative for squamous cell carcinoma or dysplasia. The patients who displayed positive staining but they were negative on histopathology for squamous cell carcinoma or dysplasia had to undergo 2nd assessment of abrasions after fourteen days thereby permitting for the medical cure of traumatic & non-malignant inflammatory abrasions. They all displayed negative results on 2nd evaluation. All the patients were positively false on first evaluation and 0% on 2nd evaluation.

Table 1: Oral Cancer Distribution

Type of Cancer	No of Patients
Squamous Cell Carcinoma	10
Dysplasia	3

There were total 80 patients, 50 patients were male and 30 patients were females. The range of the age of the patients was from 12 to 65 years. Male patients outnumbered the female patients. The average age of the patients was 32 years. We did not note any allergic or some other reaction on the material of staining. There was vermilion border's stain for a long duration, tongue's dorsum & dental plaque which normally vanished in four to six hours.

DISCUSSION:

Richart for the very first time used Toluidine blue in 1963 for the staining of uterine carcinoma in Situ. Unluckily false positives appeared in high amounts in early oral research works due to the consequence of traumatic abrasions and other research works on oral inflammation. In the year of 1980, Masberg displayed that false positives utilizing applications for abrasions with no symptoms could be decreased to 6.48% by 2nd assessment of abrasions in 10 to 12 days there by permitting for the medical cure traumatic & non-malignant inflammatory abrasions. Traumatic abrasions & inflammatory alterations in the oral mucosa were not the inclusion standard of this research work 11.0% false positives in the 1st stain but they turned to 0 on the 2nd assessment after two weeks. The development of a rinse decorum carried out which established the identification of the asymptomatic carcinoma and carcinoma in Situ in very initial stage. Subsequent research works highlights to suitable utilization of Toluidine Blue rinse as an effectual to medical diagnosis of complication. This very protocol

can improve the outcome of the patient as well as on the positive influence of the different risks.

The habit of cigarette smoking, the chewing of the smokeless tobacco, Pan, chewing of beetal nut particularly in combination are very high in these areas of the South Asia. These are the most important risk factors in developing the oral and squamous cell carcinoma of lungs. Toluidine Blue is very effective adjunct for diagnosis; this very drug can be used as a rinse of screening in the patients with high risks to cover the whole oral mucosa after a complete medical examination and it also provides guidance for the improvement of the biopsy yields.

CONCLUSION:

There is recommendation of the examination of OC & screening of Toluidine blue for each & every patient present with factors of high risk for oral cancer. It is necessary to schedule at least one visit to specialist yearly for clinical checkups.

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