

# TO STUDY THE EXFOLIATIVE CYTOLOGY AND ORAL MICROBIAL FLORA IN HYPERTENSIVE PATIENTS IN COMPARISON WITH CONTROLS

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## **ABSTRACT:**

**AIM:** To study the exfoliative cytology and oral microbial flora in hypertensive patients in comparison with the controls.

**OBJECTIVE:** To assess the exfoliative cytology in hypertensive patients in comparison with controls and to do an assessment about the oral microbial flora in hypertensive patients in comparison with controls.

**BACKGROUND:** Hypertension is a prevalent condition among the elderly individuals now a days. Hypertension has various side effects on the oral hygiene such as periodontal and gingival pathology. The anti hypertensive drugs taken results in the altered salivary flow rates potentially resulting in altered oral microbial flora. The exfoliative cytology is a quick and alternative procedure to biopsy, wherein the desquamated cells gives an idea about changes undergone by the oral tissues.

**REASON:** To gain knowledge about the oral microbial flora and the changes undergone by the oral tissues among the hypertensive patients.

## **INTRODUCTION:**

Hypertension is a prevalent condition among the elderly individuals now a days. Hypertension has various side effects on the oral hygiene such as periodontal and gingival pathology. Hypertension is defined as systolic and diastolic blood pressures with values >140mmHg and >90mmHg respectively, the prevalence of which varies by age, race, and education [1]. This study focus on exploring various cytological and oral floral changes by comparing hypertensive patients with the controls. Hypertension has multifactorial complications. There is high risk of gingivitis, periodontitis, oral candidiasis and other related complications that may occur in hypertensive individuals. Human saliva is not just a fluid in the oral cavity but it reflects the various altered oral microbial flora and nature of the cells during study of exfoliative cytology. Exfoliative cytology is a non invasive, non aggressive procedure and is accepted by the patients, aid in quick and accurate assessment [2]. Certain hypothesis suggests that hypertension results in oxidation and alter mechanical forces resulting in formation of new antigens. These antigens in turn activates the T cells and results in vascular dysfunction, ultimate leading to hypertension because of these reasons there is alteration in the micro circulation and so there is cellular alteration in the oral cavity[3,4].

## **MATERIALS AND METHOD:**

The study included 20 individuals above 30 years of age of which 10 individuals were normotensive without using any medications and the remaining 10 individuals were hypertensive using anti hypertensive drugs. Salivary samples were collected and exfoliative cytology was studied by taking a smear and oral microbial flora was studied by making a swab. Two types of staining namely PAP and H and E were used for staining. Statistical analysis was done using Chi square test. Smears were taken from the buccal mucosa with the wooden sticks moistened in water and then transferred onto the slides which were marked previously with the patient's reference number and spread uniformly thin over the slides followed by staining and mounting. Similarly swab was taken from the oral cavity using a cotton swab and then cultured in a nutrient agar culture plates.

## **INCLUSION CRITERIA:**

- Patients with the known history of hypertension for the past one year.
- Hypertensive patients with a recently monitored Blood pressure levels.
- Control groups includes normotensive individuals with no history of hypertension, diabetes, smoking or other systemic complications.

## **EXCLUSION CRITERIA:**

- Smoking, alcohol consumption
- Medications taken other than hypertension.

Based on AHA recommendations hypertensive patients are grouped into 3 categories[5]

Mild - pre hypertensive systolic(120-139mmhg) diastolic (80-89mmhg)

Moderate hypertensive- systolic (140-150mmhg) diastolic (90-99mmhg)

Severe hypertension- systolic >160 mmhg Diastolic > 100 mmhg

## RESULTS:

SAMPLE NO	NO.OF MICRONUCLEI	MICROBIAL FLORA
1	Nil	Streptococcus
2	Nil	Entrococcus
3	Nil	Streptococcus
4	6	G-tive bacilli
5	28	Entrococcus
6	Nil	Streptococcus
7	4	Streptococcus
8	5	Entrococcus
9	Nil	Streptococcus
10	1	Streptococcus

Table1: RESULTS OF HYPERTENSIVE INDIVIDUALS

SAMPLE.NO	NO.OF MICRONUCLEI	MICROBIAL FLORA
1	Nil	Candida albicans
2	Nil	Candida krusei
3	Nil	Candida glabarata
4	1	Candida parapsilosi
5	Nil	Enterococcus
6	Nil	Candida albicans
7	Nil	Streptococcus
8	2	Candida albicans
9	Nil	Candida krusei
10	Nil	Candida albicans

TABLE 2: RESULTS OF CONTROLS

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
<b>Pearson Chi-Square</b>	<b>20.000<sup>a</sup></b>	<b>10</b>	<b>.029</b>
Likelihood Ratio	12.781	10	.236
Linear-by-Linear Association	.026	1	.873
N of Valid Cases	10		

a. 18 cells (100.0%) have expected count less than 5. The minimum expected count is .10.

Micronuclei is a smaller nuclei formed when the fragment of the chromosome is not incorporated into the daughter nuclei. Micronucleus formation can be caused by chromosomal breakage or through the dysfunction of the mitotic spindle apparatus. Thus, micronucleus formation can be, in part, caused by replication errors as a result of persistent DNA damage at the time of S-phase. And is a sign of genotoxic and chromosomal instability. There's increased nuclear cytoplasmic ratio in hypertensive individuals in comparison with the normotensive individuals. The oral microbial flora of the hypertensive individuals consist maximum percentage of streptococcus, enterococcus, and a few G-tive bacilli and the oral flora seen in normotensive individuals is the candida species.

## DISCUSSION:

The study shows that there is evident genotoxic damage to the cells of the buccal mucosa because of the systemic condition of the patient( statistical significance p value 0.029). And we observed increased nuclear size and inflammatory infiltrate in few cases of hypertensive patients and normal nuclear size in normotensive individuals. Al Zamora, Y.M Ortiz –Garcia et.al in there study have concluded that oxidative stress in periodontitis results in alteration in the micro nuclei. Studies suggests that the genomic instability can result from hypertension, anti hypertensive drugs, life style, increased BMI, food habits , high levels of triglycerides, LDL etc. studies done to understand the exfoliative cytology among the diabetic patients made an impact to study the exfoliative cytology and oral microbial flora in hypertensive patients in comparison with controls.

## CONCLUSION:

Since the calculated value (0.029) is less than table value (0.05). So there is a significant difference between two samples. Exfoliative cytology thus serves as a simple and non invasive procedure alternative to biopsy . In exfoliative cytology the shed cells are studied and the oral microbial flora gives an idea about the altered oral flora in various conditions. The results contribute to the understanding of alteration in the oral epithelium pertaining to the number, size, and color of the micronuclei and the altered microbial flora in comparison with the controls .

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