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Abnormal nuclear variations in response to radiotherapy – As a tool in treatment planning and assessment of prognosis in oral carcinoma

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Background: The treatment approaches for oral squamous cell carcinoma include single management with surgery, radiotherapy, along with chemotherapy or various combinations of these modalities. The estimation of radio sensitivity of individual tumors is essential for planning the optimum radiation schedule for each patient. Assessment of radiation induced histo morphological changes in the nucleus is known marker of radiosensitivity.

Materials and methods: The present study included fifty patients (age range of 30–65 years) with histopathologically confirmed squamous cell carcinoma of oral mucosa, and being treated by radiotherapy alone with a radiation dose schedule of 4, 14, 24 and 60 Gy respectively at 2nd, 7th, 12th and 30th day. From the included patients, smear of the buccal mucosa was collected and was air dried and fixed with methanol. The nuclear changes of micronucleus (MN), nuclear budding (NB) and multinucleation (MNU) were evaluated under the bright field microscopy after staining with Giemsa and May-Grunwald's stain.

Results: Out of the 50 37 (74%) were males and 13 (26%) were females (ratio 3:1). On examination of slides the mean percentage increase of MN and MNU when compared with pre-treatment day was statistically significant ($p = 0.001$) for comparison between day 0 (pre-treatment) & day 2, 7, 12 and 30. Similar findings were seen with NB, except between pretreatment and after 14 Gy (p-0.110). In the present study the measurement of relative increment index done in respect to all nuclear abnormalities show a sustained increase with increasing dosage of radiation.

Conclusion: The present study was undertaken to explore the possibility of establishing a relationship between the frequencies of nuclear abnormalities in patients with oral cancer with applied dosage and duration of radiotherapy. The progressive increase in micronucleus and multinucleation indices with increasing dose of radiation proves that these parameters can be used as indicators for assessing the response of tumor for radiotherapy. These parameters can be used as prognostic indicator in oral carcinoma cases undergoing radiotherapy.

Conflicts of interest

The authors have none to declare.

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Association of vitamin D receptor gene polymorphisms and bone mineral density in ethnic women of Tripura

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Introduction: The incidence of osteoporosis increases with age, and in women increases once menopause is reached. Osteoporosis is multi factorial, has a strong genetic component. However, consensus on the association of bone mineral density with specific gene locus has not been reached. Several studies have been conducted in different countries including India. However, no such data is available with regards to the ethnic women of North East India.

Objectives: The broad rationale of the study is investigating genetic factor and its association with low bone mass in a cohort of tribe of NE. We have investigated the potential association of vitamin D receptor (VDR) gene polymorphisms (Bsm1, Fok1, Apa1) with BMD tribal women of Tripura.

Methods: The subjects were genotyped by PCR-RFLP and underwent BMD measurements at spine and hip by dual energy X-ray absorptiometry.

Results: The average BMD at spine and hip of women with genotypes aa, bb,FF and TT was much higher than those with genotypes AA, BB, ff and tt, respectively. The interaction between the genotypes showed significant effect of *Bsm*I-*Apa*I genotypes.

Conclusion: Study reveals that VDR gene polymorphisms has strong association with BMD at hip than in spine in the tribal women and perhaps, has an influence on some of the determinants of bone metabolism.

Conflicts of interest

The authors have none to declare.

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Incidence of numerical chromosomal anomalies in AML patients category under which the paper is to be considered

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Introduction: Acute myeloid leukemia (AML) is a tumor of hematopoietic progenitors caused by acquired oncogenic mutations that impede differentiation, leading to the accumulation of immature myeloid blasts in the marrow. The single most important prognostic factor in AML is cytogenetics, which determine the prognosis and probability of relapse after treatment. Hence the cytogenetic analysis of AML patients plays a great role in prognosis and treatment.

Material and methods: Karyogram of diagnosed patients of AML was prepared from bone marrow and peripheral blood. This study was conducted in the Cytogenetic Laboratory of the Dept. of Anatomy, K.G.M.U., Lucknow, UP, India. Patients were screened in the Dept. of Pediatrics Medicine and the sample was collected from the Pathology.

Observations and results: We observed the frequency of chromosomal aberrations in different age groups and sex. Out of 22 successful cases 12 cases (54.54%) exhibited abnormal karyogram and 10 cases (45.45%) showed normal karyogram. Numerical chromosomal abnormality was observed in 31.81% cases. Most common abnormality observed was Trisomy 21 (13.63%) followed by Trisomy 8 (9.09%) and Trisomy 11 associated with Trisomy 21(4.54%).

Discussion and conclusion: Trisomy 21 was found to be most prevalent in UP region as compared to Trisomy 8 and Trisomy 11 associated with Trisomy 21. Trisomy 21 has intermediate risk for developing AML, Trisomy 8 is likely to be a disease modulating secondary event and Trisomy 11 has poor prognostic value in AML patients. Hence the cytogenetic analysis of AML patients plays a great role in prognosis and treatment.