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# Assess The Countenance Of Calretinin And Cytokeratin19 In Jaw Bone Pathologies In Northern India.

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## Abstract

Calretinin is a binding protein involved in calcium signalling. The CALB2 gene encodes this protein, which is essential for cells to work.

Certain neurons in the nervous system express calretinin. It is also found in specialized cells, such as Leydig cells. These cells produce testosterone.

The calretinin protein is present in several other locations, including hair follicles. It has become a valuable biomarker for specific illnesses. These include Hirschsprung disease and malignant mesothelioma.

Pathologists use immunohistochemistry to tell different forms of cancer and cell types apart. Calretinin is one of several immunohistochemical markers used to diagnose malignant mesothelioma.

Cytokeratin (CK)-19 is a type I cytokeratin, has been found to be a reliable marker of epithelial differentiation. The intense expression of CK-19 is useful for identification of odontogenic epithelial components, thus suggesting their potential for proliferation to form epithelial odontogenic cysts and tumour's.

***Keywords:*** Ameloblastoma calretinin, Cytokeratin, Immunohistochemistry, Ortho keratinized odontogenic cyst.

## AIM:

To assess the countenance of calretinin and cytokeratin 19 (CK19) in jaw bone pathologies

## MATERIALS AND METHODS:

The study was conducted in the Department of Dentistry in Prasad medical college and hospital Lucknow Up India, in collaboration with Zoram medical college falkawn, Mizoram India. In this study 120 samples of formalin-fixed paraffin embedded tissue specimens were taken in which 30 radicular cysts, 30 dentigerous, 30 odontogenic keratocysts (OKCs), and 30 ameloblastom a were evaluated for the expression of CK19 and calretinin using immunohistochemistry.

The study material comprised of 120formalin fixed, paraffin embedded specimens taken from archival tissue blocks. Clinically, radiographically, and histologically confirmed cases of

dentigerous cyst (group I, *N* = 30), OKC (group II, *N* = 30), radicular cyst (group III, *N* = 30), and ameloblastoma (group IV, *N* = 30) were included in the study.

## IMMUNOHISTOCHEMISTRY (IHC)

Immunohistochemistry (IHC) is a method for detecting antigens or haptens in cells of a tissue section by exploiting the principle of antibodies binding specifically to antigens in biological tissues. The antibody-antigen binding can be visualized in different manners. Enzymes, such as Horseradish Peroxidase (HRP) or Alkaline Phosphatase (AP), are commonly used to catalyse a colour-producing reaction.

IHC is widely used in many research and clinical laboratories because this technique makes it possible to visualize the distribution and localization of specific cellular components within cells and in proper tissue context. There are numerous IHC methods that can be used to localize antigens. The method selected should include consideration of parameters such as the specimen types and assay sensitivity.

## CRITERIA FOR EVALUATION OF STAINING

Labelling index (LI) was calculated by dividing the number of positive cells by the total number of cells counted in the slide and expressed as percentage. A minimum of thousand cells was counted for each slide. The cytoplasmic staining intensity was evaluated and graded as mild (+), moderate (++), and intense (+++) as described. Mild staining is denoted by light brown colour, moderate by brown colour, and intense by dark brown colour. The cells that did not take up any brown stain were considered negative.

## STATISTICAL ANALYSIS

Chi-square test was done to compare tissue localization of stain, nature of stain, intensity of stain, and the percentage of cells stained among the study groups. *P* value less than 0.05 was considered to be statistically significant.

## RESULT

| Stain intensity | Dentigerous cyst | Okc | Radicular cyst | ameloblastoma | p – value |
|---|---|---|---|---|---|
| | n % | n % | n % | n % | 0.000* |
| No stain | 30 100 | 26 86.6 | 30 100 | 0 0 | |
| Mild stain | 0 0 | 2 6.6 | 0 0 | 20 66.6 | |
| Moderate stain | 0 0 | 2 6.6 | 0 0 | 8 26.6 | |
| Intense stain | 0 0 | 0 0 | 0 0 | 2 6.6 | |

***p-value highly significant***

Staining Intensity of Calretinin Among the Study Group

Among the odontogenic cysts, all the cases of dentigerous cysts and radicular cysts were negative for calretinin stain, whereas only two cases (6.7%) of OKC exhibited positive staining. Of the two positive cases of OKC, one showed mild stain and the other exhibited moderate staining intensity. All the cases of ameloblastoma expressed positive calretinin stain with 66.6% (*N* = 10) showing mild staining, 26.6% (*N* = 4) moderate staining and 6.6% (*N* = 1) intense staining. When the staining intensity of OKC and ameloblastoma was compared, a significantly higher intensity of calretinin staining was noted in ameloblastoma (*P* = 0.004). Mean labelling index of the study group that had stained positive for calretinin was calculated as 1.28 ± 3.39 for group II (OKC) and 19.21 ± 13.22 for group IV (ameloblastoma).

| Stain intensity | Dentigerous cyst | Okc | Radicular cyst | Ameloblastoma | p – value |
|---|---|---|---|---|---|
| | n % | n % | n % | n % | 0.169 |
| No stain | 24 80 | 30 100 | 30 100 | 28 93.3 | |
| Mild stain | 4 13.3 | 0 0 | 0 0 | 0 0 | |
| Moderate stain | 2 6.6 | 0 0 | 0 0 | 2 6.6 | |
| Intense stain | 0 0 | 0 0 | 0 0 | 0 0 | |

Staining Intensity of Ck19 in Odontogenic Cysts
Among the odontogenic cysts, all the cases of radicular and OKC were negative for CK19, whereas among the cases of dentigerous cyst, two cases showed mild staining (13.3%) and one case (6.6%) was moderately stained. Among the cases of ameloblastoma, only one case (6.6%) showed moderate staining for CK19. No significant difference was noted in the staining intensity between odontogenic cysts and ameloblastoma.

## CONCLUSION

In the current study we can conclude from the results obtained that calertinin was shown to be. characteristics.
The variable expression of calertinin in ameloblastoma and OKC establishes the role of this protein as a second messenger in the control of abnormal cell cycle proliferation.
The study further indicates that high expression of this protein makes the odontogenic epithelium less differentiated. It also explains the higher expression of calertinin protein in ameloblastoma than OKC. CK 19 epitopes is ok keep it as it is.

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