Immunohistochemical Profile of CD44 and RANK in Ameloblastoma and Keratocystic Odontogenic Tumor

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التعبير المناعى الهستوكيميائى لظهور ال سى دى 44 و رانك في الورم المينائى والأكياس الكيراتينية سنية المنشأ

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List of Abbreviations

Am : Ameloblastoma

CD44 : Cluster Differentiation 44

CD44-HA : CD44-Hyaluronic Acid

CD44V : Cd 44 Variant

CSc : Cancer Stem Cells

DAB : Diamino Benzidine

DCs : Dentritic Cells

ECM : Extracellular Matrix

EGF : Epidermal Growth Factor

EMT : Epithelial-Mesenchymal Transition

ERM : Ezrin, Radixin and Meosin

FGFR2 : Fibroblast Growth Factor Receptor 2

GEMS : Glucolipid Enriched Membrane Microdomains

HCAM : Homing Cell Adhesion Molecule

HNSCC : Human Head and Neck Carcinoma

KAM : Keratoameloblstoma

KCOT : Keratocystic Odontogenic Tumor

LPS : Lipopolysaccride

MAM : Mural Ameloblatoma

MAPK : Mitogen-Activated Protein Kinase

MAPKs : Mitogen-Activated Protein Kinase

MMP-2 : Matrix Metalloproteinase

MVD : Microvessal Density

NBCCS : Nasel Basel Cell Carcinoma

OKCs : Odontogenic Keratocysts

OPCs : Osteoclast Precursor Cells

OPG : Osteoprotegerin

OPN : Osteopontin

PAM : Peripheral Ameloblastoma

PBS : Phosphate Buffer Saline

RANK : Receptor Activated of Nuclear factor KAPPA-B

RANK-L : Receptor Activated Of Nuclear Factor KAPPA-B_Ligand

RAS : Rat Sarcoma

RHAMM : Receptor for Hyaluronan Mediated Motility

SHH : somic hedgehog pathway

TGF-B1 : Transforming Growth Factor B1

TNF : Tumor Necrosis Factor

TRAF6 : Tumor Necrosis Factor Receptor-Associated Factors

VEGF : Vascular Endothelial Growth Factor

WHO : World Health Organization

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INTRODUCTION

Most of odontogenic tumors occur intraosseously within the maxillofacial skeleton, while extra-osseous odontogenic tumors occur nearly always in the tooth-bearing mucosa. The clinical features of most benign odontogenic tumors are non- specific; benign odontogenic tumors show slow expansive growth with no or slight pain. In contrast, pain is the first and most common symptom followed by rapidly developing swelling in nearly all malignant odontogenic tumors. The tumor may erode or break through the gnathic bony cortex specially in pediatric populations [1].

Ameloblastoma (AM) is a very common odontogenic tumor in the oral cavity whose idiopathic nature manipulates scholars and clinicians. The etiopathogenesis of AM is controversial. The involved cellular changes - including proliferation, differentiation, senescence, tumorigenesis, etc - which are identified through the immuno-histochemical workup contribute significantly to our contemporary nosology of this aggressive benign tumor [2].

Ameloblastoma usually affects young adults in the fourth and fifth decades of life, causing local discomfort. It is characterized by a benign clinical behavior, possibly leading to local recurrences but distant metastases from AM are exceedingly rare. The involved cellular changes contribute significantly to our contemporary nosology of this aggressive benign tumor [3].

Keratocystic odontogenic tumor (KCOT), or odontogenic keratocyst, generally originates from the remnant of dental lamina or from basal cells of the oral epithelium. It predominantly develops in the mandible or maxilla, and occasionally on the gingiva as a peripheral type of manifestation [4]. Either a true cyst or a neoplasm, the scope of this study

does not include the controversial nature of KCOT, either neoplastic or cystic, because it concerns, more importantly, exploring the lesional destructive nature in terms of impressive osteooclastogenesis.

Both ameloblastoma and KCOT are characterized by a benign but locally invasive behavior, with a high risk of recurrence. Both can show an involvement of adjacent soft tissues, infiltration into the cancellous bone, and destructive growth. Read this way, hypothetically implicating, this study postulates that a plausible complex of CD44v6-OPN-RANK may exist, which is ushered toward exacerbating the osteoclastogenesis of ameloblastoma and KCOT [3,4].