**P63 Expression and Angiogenesis**

**in**

**Keratocystic Odontogenic Tumour**

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**Introduction :** Keratocystic odontogenic tumor (KCOT) is an odontogenic tumor previously called odontogenic keratocyst. Several studies reported that KCOT behavior is more likely to a benign neoplasm than cyst. It is locally destructive and has high recurrent rate. When tumor growth exceeds some stages, tumor will form new blood vessels in order to maintain its growth. This process is called angiogenesis. P63, one of the protein in p53 family, plays a role in regulation of cell division. Mutation and over expression of p63 can be found in many tumors. Only few papers described the relationship between p63 and angiogenesis, however there was none of the studies find the relationship between p63 and angiogenesis in KCOT.

**Objective :** To find the expression of p63 in KCOT and the relationship between p63 expression and angiogenesis.

**Methods :** Standard indirect immunohistochemistry using monoclonal antibodies specific to human p63 and CD105 was performed in formalin-fixed paraffin-embedded tissue sections of 39 KCOT samples. Grading of p63 immunohistochemical staining was divided into three groups [(a) score 0, when the stained cells were from 0 to <5% of the total cells; (b) score 1, when the stained cells were from >5 to <50% of the total cells; (c) score 2, when the stained cells were accounted >50%.], while an expression of microvessel density (MVD) representing angiogenesis from CD105 immunostaining in KCOT blood vessels was represented as mean +/- standard deviation.

ANOVA was used to test difference among three groups of p63 expressions. Post-hoc multiple comparisons were performed using the Tamhane test due to unequal variances among groups. Statistical analyses were performed two-sided using SPSS version 17.0 and statistical significance was defined as $P < 0.05$.

**Figure 1.** Immunohistochemical staining of KCOT. (A) High expression of p63 in basal cells layer (400x). (B) High expression of p63 in basal and suprabasal cells layer of KCOT cystic lining (400x). (C) High expression of p63 in all layers of KCOT cystic epithelial lining (200x). (D) Expression of CD105 in blood vessels of KCOT (100x). (E) Microvessels stained by CD105 in KCOT connective tissue (400x).

**Results :** P63 expression was shown in 33 of 39 KCOT cases. The expression of MVD was found significantly difference among three groups of p63 expression ($p < 0.001$). The mean expression of MVD in the group 2 (35.88 +/- 11.73) was significantly higher than group 0 (10.86 +/- 6.59) and group 1 (9.86 +/- 2.61). Whereas there was no difference between mean expression of MVD between group 0 and 1.

**Discussion :** P63 protein is one of the proteins in p53 family found in KCOT. Mutation of the p63 gene can be usually found in malignancies of oral mucosa (10). Angiogenesis is one of the most important factors for tumor growth, not only facilitate tumor growth but also allow tumor cell escape to other organs. The results of this study suggest that p63 expression might reflect the replication potential of KCOT epithelium as a tumor. This supports the hypothesis that KCOT have more neoplastic characteristics than other odontogenic cysts (2). Moreover the relationship between p63 expression and angiogenesis could suggest the proliferative ability, increased invasiveness, aggressiveness of KCOT (5) and modulation of KCOT angiogenesis by p63, which correlated with the study conducted by other group of researchers (11)

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