

## 후두편평세포암종에서 Cyclooxygenase-2의 발현

조강한 · 김경환 · 백상흠 · 홍영호 · 양훈식 · 김 훈 · 김춘길

## Expression of Cyclooxygenase-2 in Laryngeal Squamous Cell Carcinoma

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## - ABSTRACT -

**Background and Objective** : The increased levels of prostaglandins have been detected in multiple epithelial cancers including those of head and neck origin. The cyclooxygenase catalyzes the synthesis of prostaglandins from arachidonic acid. COX-2, the inducible form of cyclooxygenase, is upregulated in transformed cells and in malignant tissues. In laryngeal squamous cell carcinomas, COX-2 was overexpressed compared with normal mucosa from healthy volunteers. **Materials and Method** : The twenty one specimens were obtained from the patients with squamous cell carcinoma of the larynx. The immunohistochemistry was performed using the COX-2 monoclonal antibody. **Results** : The immunohistochemical stains revealed intense positive staining with the antibodies against COX-2 in the well differentiated areas of the laryngeal squamous cell carcinomas. In the moderate to poor differentiated areas of the laryngeal squamous cell carcinomas, the stains were weak or negative. The expressions of COX-2 were not affected by stages of laryngeal squamous cell carcinoma. **Conclusions** : The immunohistochemical analysis showed that the expressions of COX-2 in laryngeal squamous cell carcinoma were closely related with cell differentiation. Taken together, these results suggest that COX-2 may be a target for the prevention or treatment of head and neck squamous cell carcinomas. (*J Clinical Otolaryngol* 2001;12:244-248)

**KEY WORDS** : Cyclooxygenase-2 · Laryngeal cancer.

서 론

가

가

: 2001 8 10

: 2001 8 20

: , 100 - 272

27가 82 - 1

prostaglandins

. Prostaglandins cyclooxygenase(COX)

arachidonic acid

, PGE2

prostaglandins

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Cyclooxygenase - 2

Manual 1 2 , 2 3 , 3 7 , 4 8

1)  
 prostaglandins cyclooxy -  
 genase  
 Cyclooxygenase COX - 1 COX - 2 가  
 2) COX - 2 ,  
 COX - 1 Tris buffer 2 3  
 , 3 , 3% 가  
 COX - 2가 . 5 3 0.05 M  
 COX - 2가 , Tris buffer 0.01 M Citrate  
 buffer(pH 5.6) Epitope  
 4) COX - 2 mRNA . 0.05 M Tris  
 150 buffer 5 3  
 2) COX - 2 가 가 . Serum blocking 60  
 , 1) 가 가 COX - 2 monoclonal antibody(Catalog No.  
 160112, Cayman Chemical, USA) 50  
 가 . 0.05 M Tris  
 COX - 2 buffer 5 3  
 COX - 2 Biotinylated anti - mouse second antibody  
 . 15 , 0.05 M Tris buffer 5  
 3  
 15 . 0.05 M Tris buffer 5 3  
 3 - amino - 9 - ethyl car -  
 bazole(AEC) chromogen D.D.W  
 5 3 Mayer Hemato -  
 xyline Gelatin mountant  
 가 . Kit Histostain SP kit(Zymed LAB -  
 SA detection system, USA) .  
 , 2  
 40 75 , (100 )  
 53.3 21 . COX - 2  
 8 , 9 , (200 ) ,  
 가 4 . 10% COX - 2  
 well 14 , moderate 7 , 10%  
 1997 AJCC Cancer Staging COX - 2 10%

SPSS version 8.0  
Square test

COX - 2  
Chi -  
p value가 0.05

결 과

후두암의 분화도에 따른 COX-2의 발현

분화도	COX - 2		COX - 2 발현률 (%)
	양성 (No.)	음성 (No.)	
가 (Well)	14	12	85.7
나 (Moderate)	7	3	42.9

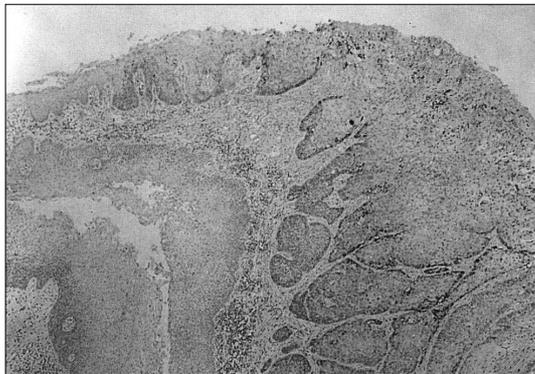
Chi-square test result:  $p < 0.05$

(Table 1).

**Table 1.** The relationship between differentiation of laryngeal squamous cell carcinomas and cyclooxygenase-2 expression

Differentiation	COX-2 expression	
	Posive No. (%)	Negative No. (%)
Well (N = 14)	12 (85.7)	2 (14.3)
Moderate (N = 7)	3 (42.9)	4 (57.1)

( $p < 0.05$ )

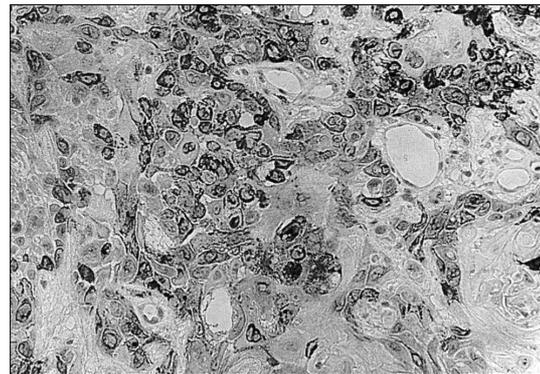


**Fig. 1.** Well differentiated squamous cell cancer of the larynx showing positive staining to COX-2 antibody (H & E,  $\times 40$ ).

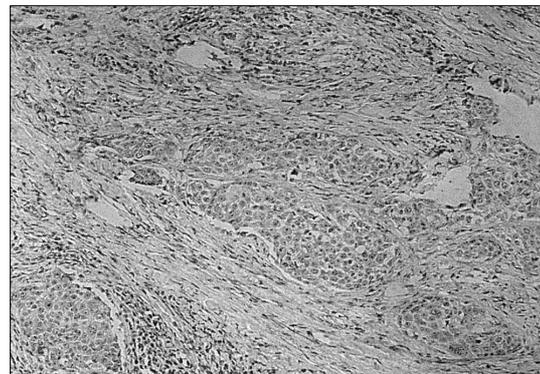
(Figs. 1 and 2).  
가 COX - 2  
(Fig. 3).

후두암의 병기에 따른 COX-2의 발현

Stage	양성 (No.)	음성 (No.)	발현률 (%)
I (N = 2)	2	0	100
II (N = 3)	2	1	66.7
III (N = 7)	5	2	71.4
IV (N = 8)	5	3	62.5



**Fig. 2.** Well differentiated squamous cell cancer of the larynx showing positive staining to COX-2 antibody (H & E,  $\times 200$ ).



**Fig. 3.** Moderate differentiated squamous cell cancer of the larynx showing weak or negative staining to COX-2 antibody (H & E,  $\times 100$ ).

**Table 2.** The relationship between stage of laryngeal squamous cell carcinomas and cyclooxygenase-2 expression

Stage	COX-2 expression	
	Posive No. (%)	Negative No. (%)
Stage I (N = 2)	2 (100)	0 ( 0 )
Stage II (N = 3)	2 (66.7)	1 (33.3)
Stage III (N = 7)	5 (71.4)	2 (28.6)
Stage IV (N = 8)	5 (62.5)	3 (37.5)

( $p < 0.05$ )

Cyclooxygenase - 2

1 2 2 COX - 2 가 . Dexamethasone, anti - oxidants, retinoids, p53

2 , 3 7 5 , 4 8 5 COX - 2 celecoxib(SC - 58635), NS - 398 COX - 2 azoxymethane<sup>4)</sup>

**고 찰**

COX - 2 72 kDa , , COX - 2 JTE - 522 G1 telomerase activity<sup>10)</sup>

COX - 1 ras scr<sup>5)</sup> , epidermal growth factor, transforming growth factor beta, TNF - alpha, COX - 2<sup>11)</sup> 가<sup>12)</sup> retinoids EGF

achidonic acid<sup>4)</sup> prostaglandins가 , PG COX - 2<sup>3)</sup> prostaglandins<sup>13)</sup> COX - 2 . 1999

E2 prostaglandins , 가 COX - 2 가 19

COX - 2가 COX - 2 가 COX - 2 가 COX - 2<sup>1)</sup> RT - PCR

COX - 2 가 COX - 2 mRNA 150 가 COX - 2가

가<sup>7)</sup> COX aspirin, COX - 2<sup>2)</sup>

indomethacin 40% NSAIDs가 , COX - 2<sup>9)</sup> 2 COX - 2

NSAIDs 가 COX - 2

NSAIDs COX - 2

2 가 1990 COX - 2 prostaglan - 가 COX - 2

dins , COX - 1 COX 7 3 가 4

가  
 2 가  
 가  
 21 1 가 2 ,  
 2 가 3 , 3 가 7 , 4 가 8  
 가  
 1  
 COX - 2  
 2 2 , 3 4 , 4 5  
 가  
 결론  
 COX - 2  
 1) COX - 2 가 (42.9%)  
 (85.7%) 가 (p<0.05).  
 2) COX - 2 1 100%, 2 66.7%,  
 3 71.4%, 4 62.5%  
 COX -  
 2  
 COX - 2  
 가  
 가 COX - 2  
 중심 단어 : Cyclooxygenase - 2

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