

# 비용에서의 Bcl-2, Bax, Fas의 발현 양상

원광대학교 의과대학 이비인후과교실,<sup>1</sup> 병리학교실<sup>2</sup>  
이재훈<sup>1</sup> · 최태욱<sup>1</sup> · 윤기중<sup>2</sup>

## Expressive Pattern of Bcl-2, Bax and Fas in Nasal Polyp

Jae Hoon Lee, MD<sup>1</sup>, Tae Wook Choi, MD<sup>1</sup> and Ki Jung Yun, MD<sup>2</sup>

<sup>1</sup>Department of Otolaryngology and <sup>2</sup>Pathology, College of Medicine, Wonkwang University, Iksan, Korea

—ABSTRACT—

**Background and Objectives** : Nasal polyp is non-neoplastic, chronic inflammatory disease of the nasal mucosa. Their formation may be associated with allergy or inflammation. Bcl-2 is known as anti-apoptotic gene, whereas Bax and Fas are known as pro-apoptotic genes. To illustrate the role of the Bcl-2, Bax and Fas in the pathogenesis of nasal polyp, we investigated expressive pattern of the Bcl-2, Bax and Fas in nasal polyp. **Materials and Methods** : The study samples were obtained after surgical removal of 19 cases of nasal polyp and 13 cases of normal nasal mucosa in the inferior turbinate as a control. The Bcl-2, Bax and Fas expressions were assessed by immunohistochemical staining. **Result** : The Bcl-2, Bax and Fas were expressed at seromucinous gland and cytoplasm of respiratory epithelium of nasal polyp and normal control. Only the Bcl-2 expression of nasal polyp was significantly decreased compared to normal control (p=0.0001). **Conclusion** : This study suggests that apoptosis inhibition by the Bcl-2 may be not related to the formation of nasal polyp. (J Clinical Otolaryngol 2003;14:76-80)

**KEY WORDS** : Nasal polyp · Bcl-2 · Bax · Fas · Apoptosis.

### 서 론

1)2)

(lamina propria) (metaplasia) Fas - ligand 2 oncoprotein (3-5) Bcl - 2 (6) Bcl - 2, Bax, Fas

: 2002 12 30

: 2003 2 25

: , 570 - 711

344 - 2

### 대상 및 방법

: (063)850 - 1310 · : (063)841 - 6556  
E - mail : coolnose@wonnms.wonkwang.ac.kr

### 대 상

1998 1 2000 12 3

면역조직화학학적 염색 및 판독

Probeon - plus slide(Fisher Scientific, Pittsburgh, PA, USA) xylene

. Citrate buffer(pH 6.0)

10 autoclave(121 )

3% 10 Im-muno/DNA (Research Genetics, Huntsville, AL, USA) Protein blocker(Zymed, San Francisco, CA, USA) 10 Bcl - 2(Oncogene Research Products, Darmstadt, Germany, 1 : 100), Bax(Santa Cruz Biotechnology, CA, USA, 1 : 100), Fas(Santa Cruz Biotechnology, 1 : 50) 1

2 (biotinylated secondary antibody) 가 HRP - streptavidine(Zy-med) 10 AEG(Zymed)

. Mayer 's hematoxylin Universal mount(Research Genetics)

1 Bax Hodgkin 's disease , Bcl - 2 가 ,

: Bcl - 2, Bax, Fas

Fas 7) 10%

0, 10~24% 가 1+, 25~49%

가 2+, 50%

2 3+ . 10% 10%

H - E

19

19~70

47.9 11 , 8 .

13

22~59 42.7

8 , 5 .

**통계학적 검증**

Bcl - 2, Bax, Fas - L 가 가

chi square test, Fisher 's exact test

SPSS(ver 10.0)

(p ) 0.05 .

**결 과**

조직에서의 염색 분포

Fas, Bcl - 2 Bax

Bcl-2의 양성발현율

13 12 (92.3%)

1 (7.6%) . 17

(89.4%) 2 (10.5%)

Bcl - 2

(p=0.0001, Table 1, Figs. 1, 2 and 5).

Bax의 양성발현율

13 11 (84.6%)

2 (15.3%) . 16

**Table 1.** Fas, Bcl-2 and Bax expression in nasal polyp (NP) and inferior turbinate (IT) groups

	NP (n=19)		IT (n=13)		p value
Fas	13	6	4	9	0.09
Bcl-2	17	2	1	12	0.0001
Bax	3	16	2	11	0.99

(84.2%) 3 (15.7%)  
 (p=0.99, Table 1, Figs. 1 and 3).

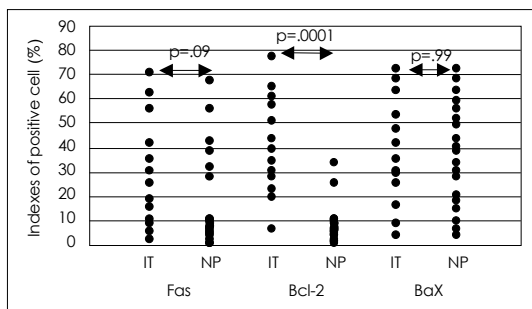


Fig. 1. Indexes of Fas, Bcl-2, Bax in each inferior turbinate (IT) and nasal polyp (NP).

Fas의 양성발현율  
 13 9 (69.2%)  
 4 (30.7%) 13  
 (68.4%) 6 (31.5%)  
 (p=0.09,

Table 1, Figs. 1 and 4).

고찰

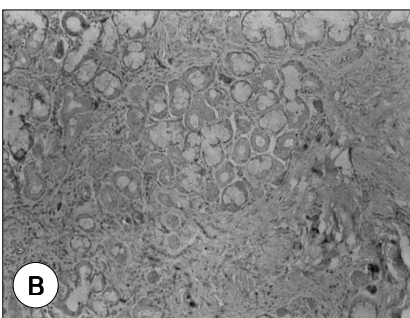
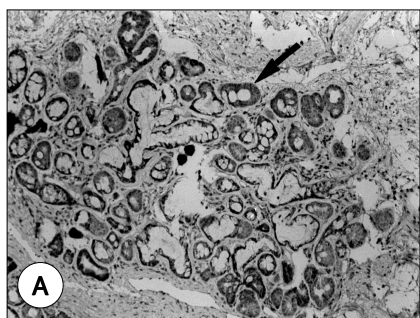


Fig. 2. Immunohistochemical staining for Bcl-2. Seromucinous glands and cytoplasm of epithelium are positive in normal control, but negative in nasal polyp. Dark brown color (arrow) indicates the positive expression (x 100). A : normal mucosa in inferior turbinate, B : nasal polyp.

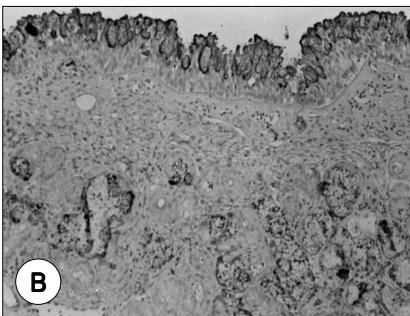
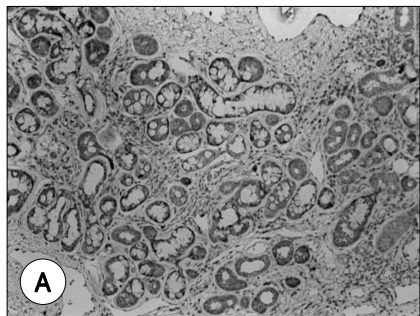


Fig. 3. Immunohistochemical staining for Bax. Seromucinous glands and cytoplasm of epithelium are positive in normal control and nasal polyp (x 100). A : normal mucosa in inferior turbinate, B : nasal polyp.

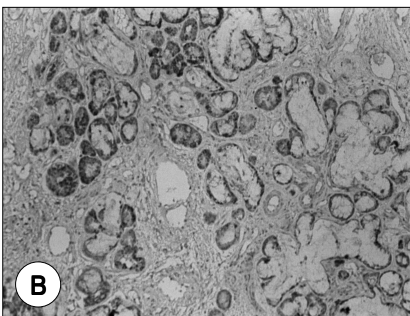
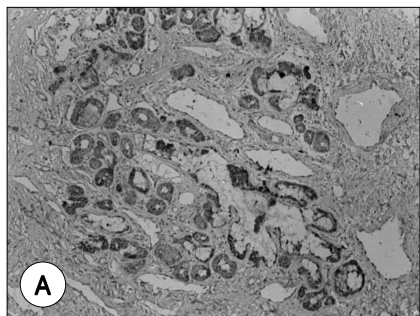


Fig. 4. Immunohistochemical staining for Fas. Seromucinous glands and cytoplasm of epithelium are positive in normal control and nasal polyp (x 100). A : normal mucosa in inferior turbinate, B : nasal polyp.

: Bcl - 2, Bax, Fas

insulin like growth factor - (IGF - ), transforming growth factor - a (TGF - a), transforming growth factor - (TGF - ), platelet derived growth factor(PDGF)

1)

(apoptosis) (necrosis)가 가 Bcl - 2, Bax, p53, APO - 1/Fas ligand (protooncogene)

(death receptor pathway) (mitochondrial pathway) 가

Apo - 1/Fas, tumor necrosis factor(TNF)가 Bcl - 2 family antiapoptotic protein proapoptotic protein Bcl - 2 Bcl - XL cytochrome c proapoptotic protein Bax, Bid, Bad가 cytochrome c Bcl - 2 , Bcl - 2 Bax, Bad Bcl - 2 Bcl - XL Bcl - 2 가 .<sup>6)</sup>

Bcl - 2 (overexpression)<sup>9)10)</sup> Sheu<sup>11)</sup> Bcl - 2 Bcl - 2가

Bcl - 2 가 (apoptosis index)<sup>12)13)</sup> Hotz<sup>14)</sup> 가

Fas ligand가 Fas ligand Fas(CD95)<sup>7)</sup>

Bcl - 2 Fas - ligand가 Bcl - 2 Fas - ligand Guichard proliferating cell nuclear antigen Bcl - 2

Zirolì<sup>3)</sup> aspirin Fas Fas aspirin - sensitive non - sensitive 가 Fang<sup>4)</sup> Fas - ligand Fas - ligand 가 Davidsson<sup>5)</sup> Fas CD68+ macrophage - like cells가 Bcl - 2, Bax Fas 가 Bcl - 2, Bax, Fas가 가 Bcl -

가  
 가  
 가  
 Bcl - 2  
 Bcl - 2  
 Bcl - 2,  
 Bcl - 2,  
 Bcl - 2,  
 Bcl - 2,  
 Bcl - 2

Bax, Fas

, Bax Fas  
 Bcl - 2

oncoprotein 가

중심 단어 : Bcl - 2 · Bax · Fas ·

2001

REFERENCES

- 1) Coste A, Wang QP, Roudot-Thoraval F, Poron F, Peynegre R, Escudier E, et al. Epithelial cell proliferation in nasal polyps could be up-regulated by platelet-derived growth factor. *Laryngoscope* 1996;106:578-83.
- 2) Coste A, Rateau J-G, Roudot-Thoraval F, Chapelin C, Gilain L, Poron F, et al. Increased epithelial cell proliferation in nasal polyps. *Arch Otolaryngol Head Neck Surg* 1996;122:432-6.
- 3) Ziroli NE, NA H, Chow JM, Stankiewicz JA, Samter M, Young MR. Aspirin-sensitive versus non-aspirin-sensitive nasal polyp patients: Analysis of leukotrienes/Fas and Fas-ligand expression. *Otolaryngol Head Neck Surg* 2002;126:141-6.
- 4) Fang SY, Yang BC. Overexpression of Fas-ligand in human nasal polyps. *Ann Otol Rhinol Laryngol* 2000;109:267-70.
- 5) Davidsson A, Andersson T, Hellquist HB. Apoptosis and phagocytosis of tissue-dwelling eosinophils in sinonasal polyps. *Laryngoscope* 2000;110:111-6.
- 6) Zimmermann KC, Green DR. How cells die: Apoptosis pathways. *J Allergy Clin Immunol* 2001;108:99-102.
- 7) Na HJ, Do NY, Lee DY, Choi JY, Hur J, Park JH, et al. A study of apoptosis in sinonasal malignant tumors: Bcl-2 and Fas-L expression. *Korean J Otolaryngol* 2000;43:1298-304.
- 8) Park SK, Heo KW, Kim YJ. Histologic types and associated findings of nasal polyp. *Korean J Otolaryngol* 2002;45:348-53.
- 9) Lu QL, Poulsom R, Wong L, Hanby AM. Bcl-2 expression in adult and embryonic non-hematopoietic tissues. *J Pathol* 1993;169:431-7.
- 10) Doglioni C, Dei Tos AP, Laurino L, Chiarelli C, Barbareschi M, Viale G. The prevalence of bcl-2 immunoreactivity in breast carcinomas and its clinicopathological correlates, with particular reference to estrogen receptor status. *Virchows Arch* 1994;424:47-51.
- 11) Sheu LF, Chen A, Meng CL, Ho KC, Lin FG, Lee WH. Analysis of bcl-2 expression in normal, inflamed, dysplastic nasopharyngeal epithelia, and nasopharyngeal carcinoma: Association with p53 expression. *Human Pathol* 1997;28:556-62.
- 12) Frieman M, Grey P, Venkatesan TK. Prognostic significance of bcl-2 expression in localized squamous cell carcinoma of the head and neck. *Ann Otol Rhinol Laryngol* 1997;106:445-50.
- 13) Gallo O, Boddi V, Calzolari A, Slmonetti L, Trovati M, Bianchi S. Bcl-2 protein expression correlates with recurrence and survival in early stage head and neck cancer treated with radiotherapy. *Clin Cancer Res* 1996;2:261-7.
- 14) Hotz MA, Bosq J, Zbaren P, Reed J, Schwab G, Krajewski S, et al. Spontaneous apoptosis and the expression of p53 and bcl-2 family proteins in locally advanced head and neck cancer. *Arch Otolaryngol Head Neck Surg* 1999;125:417-22.
- 15) Guichard C, Gilain L, Samad IAA, Brugel L, Escudier E, Coste A, et al. Epithelial cell proliferation, apoptosis, and apoptosis inhibition in inverted papillomas. *Laryngoscope* 1998;108:716-20.