

백서에서 화학접착제 흡입이 후점막에 미치는 형태학적 변화

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정대건 · 박해섭 · 김병국 · 박소영 · 박용수

Morphological Changes of the Olfactory Mucosa in the
Chemical Adhesive Inhalation RatDae Gun Jung, MD, Hae Sup Park, MD, Byung Guk Kim, MD,
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- ABSTRACT -

Background and Objectives : Chemical solvents abuse is a growing public health problem in the Korea and elsewhere, particularly among young adults and children. Chemical adhesive is a potent sensory irritant in man and animals due to its high solubility in nasal mucosa. Inhalation of chemical adhesives has been to cause hearing loss and abnormal auditory brainstem responses (ABR) and many neurologic sequelae. In this study we investigated the morphological changes of olfactory mucosa in chemical adhesive inhaled rat. **Materials and Methods** : In 40 healthy Spague-Dawley rat, we examined the olfactory mucosa after exposure to chemical adhesive. **Results** : 1) In experimental groups the olfactory mucosa showed increasing inflammatory cells in lamina propria and atropic changes, loss of cilia in olfactory epithelium. 2) These changes are deepened in proportion to exposed days. 3) These changes are recovered to normal within 3 weeks in case of experimental groups which the exposed duration is less than 5 days. 4) But these changes are not recovered to normal within 3 weeks in case of experimental groups which the exposed duration is 7 days. **Conclusion** : We concluded that the morphological changes of olfactory mucosa may be permanent and so the olfaction may be deteriorated when the duration of chemical adhesive exposure is over 7 days in rats. (**J Clinical Otolaryngol 1999;10:231-237**)

KEY WORDS : Chemical adhesive · Olfactory mucosa · Rat.

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, ¹⁾²⁾ toluene

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(Table 1).
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 raform aldehyde
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연구 방법
 DOAEJI
 후점막의 광학현미경 소견
 가 (pseudostrat-
 ified columnar epithelium) 가
 90 ml 90 ml (sup-
 porting cell), (olfactory vesicle)
 2 (olfactory cell), (basal lamella)
 gas chromatography(GC) (basal cell)
 toluene 42% 가
 cyclohexane 19.7%, acetone 9.1%

Table 1. Gas analysis of chemical adhesive(wt%)

Solvent	DOAEJI bond
Toluene	42.0
Methanol	T
Ethylacetate	-
Cyclohexane	19.7
N-hexane	T
Acetone	9.1
Xylene	the rest

T<2.0% below - : negative

(Fig. 1).

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후점막의 주사 전자현미경 소견

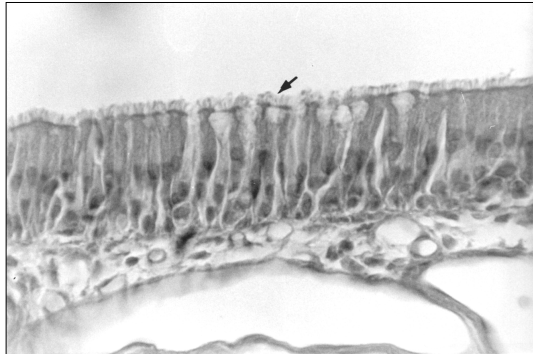


Fig. 1. Photomicrograph of the olfactory mucosa in normal rat. A tall, pseudostratified columnar epithelium with intact cilia (arrow) was seen (H & E stain, $\times 400$).

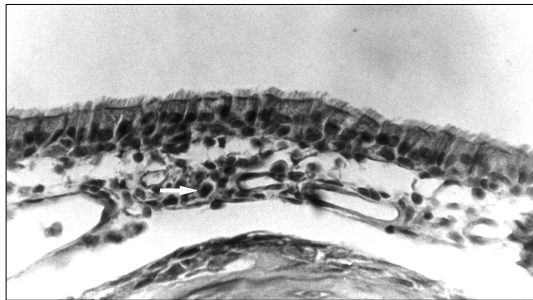


Fig. 2. Photomicrograph of the olfactory mucosa in rat exposed to chemical adhesive for 1 day. The inflammatory cells (arrow) were appeared (H & E stain, $\times 400$).

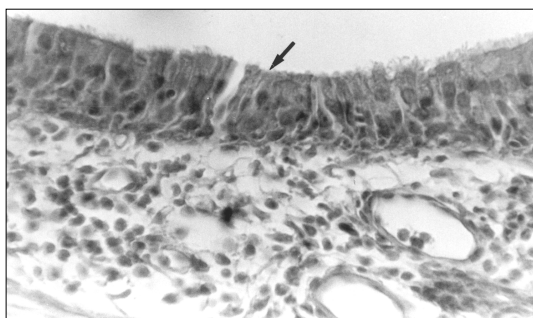


Fig. 3. Photomicrograph of the olfactory mucosa in rat exposed to chemical adhesive for 3 days. The loss of cilia (black arrow) and more increased inflammatory cells were seen (H & E stain, $\times 400$).

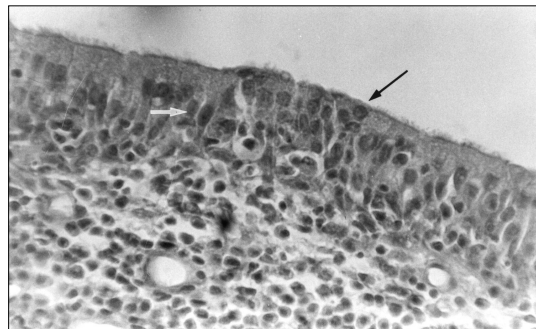


Fig. 4. Photomicrograph of the olfactory mucosa in rat exposed to chemical adhesive for 5 days. More loss of cilia (black arrow) and more increased inflammatory cells were seen. Also noted the dispersed array of epithelial layer (white arrow) (H & E stain, $\times 400$).

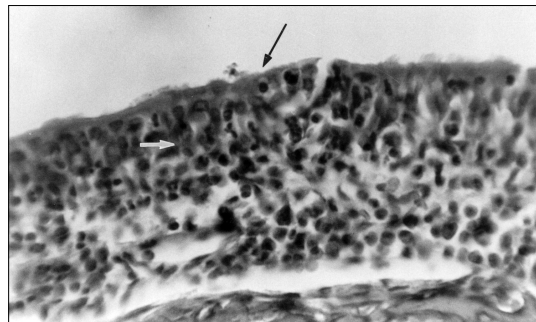


Fig. 5. Photomicrograph of the olfactory mucosa in rat exposed to chemical adhesive for 7 days. More loss of cilia (black arrow) and more increased inflammatory cells were seen. Also noted the dispersed array of epithelial layer (white arrow) (H & E stain, $\times 400$).

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 (Fig. 6).
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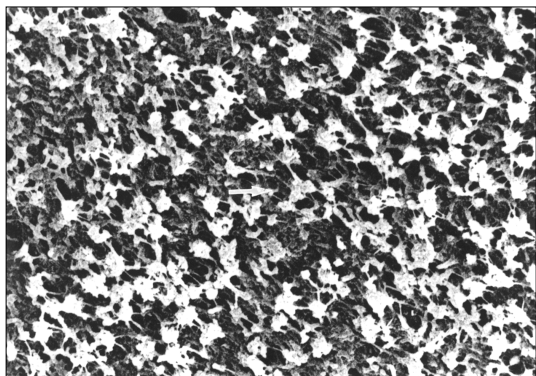


Fig. 6. Scanning electron micrograph of the olfactory mucosa in normal rat (× 5000). White arrow indicate the olfactory cilia mat.

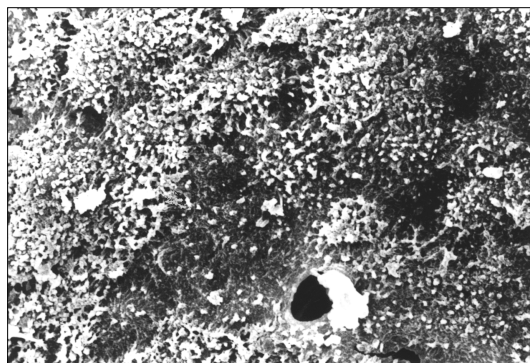


Fig. 8. Scanning electron micrograph of the olfactory mucosa in rat exposed to chemical adhesive for 7 days (× 5000).

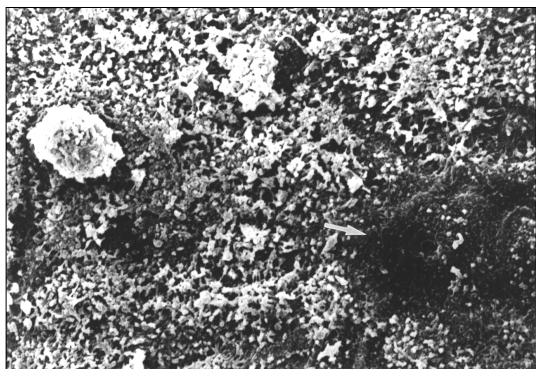


Fig. 7. Scanning electron micrograph of the olfactory mucosa in rat exposed to chemical adhesive for 3 days. The atrophic change and loss of cilia (white arrow) were seen (× 5000).



Fig. 9. Photomicrography of the olfactory mucosa in rat 2 weeks after exposure to chemical adhesive for 5 days. It showed similar state compared to control group (H & E stain, × 400).

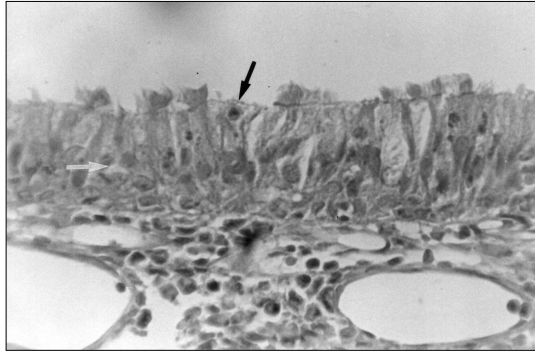


Fig. 10. Photomicrography of the olfactory mucosa in rat 2 weeks after exposure to chemical adhesive for 7 days. The loss of cilia (black arrow) and dispersed array of epithelial layer (white arrow) (H & E stain, $\times 400$).

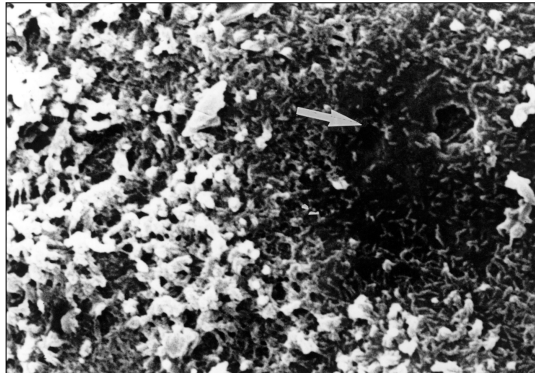


Fig. 11. Scanning electron micrograph of the olfactory mucosa in rat 2 weeks after exposure to chemical adhesive for 7 days. The atrophic change and loss of cilia (white arrow) were seen ($\times 5000$).

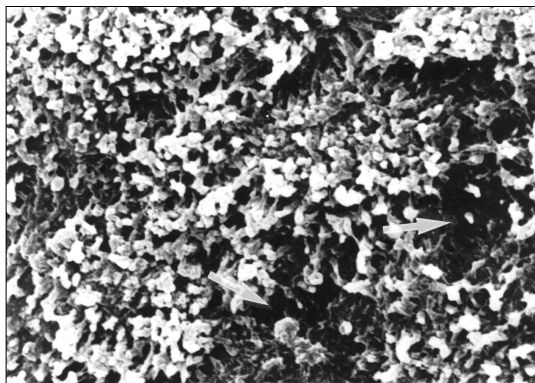


Fig. 12. Scanning electron micrograph of the olfactory mucosa in rat 3 weeks after exposure to chemical adhesive for 7 days. The atrophic change and loss of cilia (white arrow) were still remained ($\times 5000$).

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중심 단어 :

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