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內文：

#### Introduction

1. Radiotherapy-induced glossitis (RTG) refers specifically to the injury of tongue tissues from radiotherapy
2. The clinical manifestations of RTG include hyperemia, erythema, ulceration, pseudomembrane formation and pain
3. Compared with more easily damaged sites, such as the buccal mucosa, oral floor or soft palate, the presentation of RTG is a more severe injury of the mucous membrane in the oral cavity .
4. An animal model of RTG was employed to produce obvious lesions in the tongue tissues .
5. Research increasingly suggests that colony-forming cells ,such as fibroblasts and vascular endothelial cells in the submucosal tissue, are injured by irradiation
6. the aim of the present study was to explore the correlation between the severity of RTG and endothelial cell injury in local tissues in a rat model

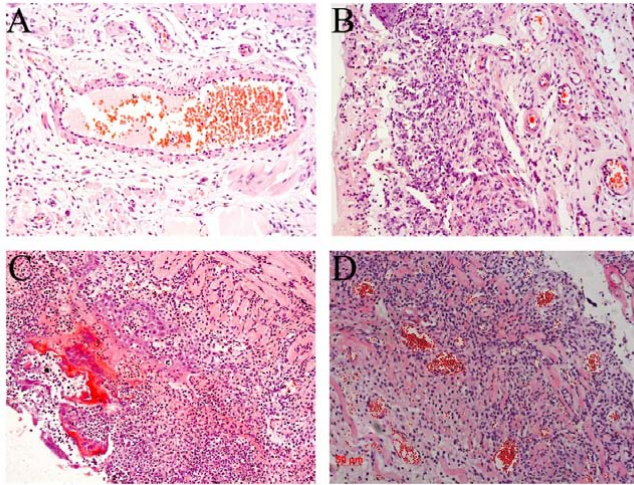
#### Materials and Methods

1. Thirty-six specific pathogen free , male Sprague- Dawley rats that were 10 to 12 weeks of age and weighed 250 to 300 g were purchased from the Northern Campus Animal Center of Sun Yat-sen University.
2. Six rats were maintained in each cage and provided free access to standard rat food and filtered city tap water from standard Perspex drinking bottles.
3. All rats were allowed to adapt to breeding conditions for 2-3 days prior to x-ray irradiation,  
so the maximum mitigation of adverse irradiation responses was achieved.
4. Rats were randomly divided into 6 groups of 6 with 1 group serving as the control and the other 5 groups as the experimental groups.
5. The 6 rats in the control group were shielded under a lead plate while the 30 rats in the 5 experimental groups were irradiated.
6. The times that samples were obtained: 5 d, 8 d, 14 d, 21 d and 28 d
7. three continuous serial 3- $\mu$ m thick sections of tongue were prepared. The first one was stained with HE. The second one was stained with IHC. The third one was analyzed with TUNEL.
8. All statistical data (OMI, percentage of apoptotic endothelial cells) were analyzed
9. OMI oral mucositis index

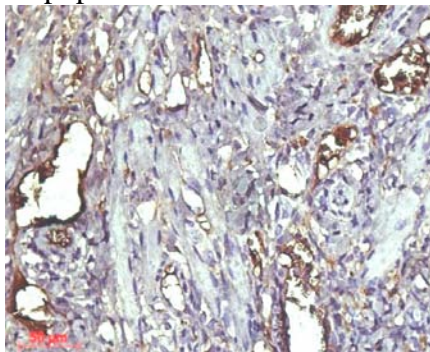
Score	Description
0	Normal
0.5	Slightly pink
1.0	Slightly red
2.0	Severely red
3.0	Focal desquamation
4.0	Exudate covering less than one-half of the irradiated mucosa
5.0	Virtually complete ulceration of the mucosa

#### Discussion:

1. Under the  $\times 200$  visual field of microscopy, the vascular lumens in the control group were smooth on the internal surface, and endothelial cells were located on the wall of blood vessel wall
2. In the irradiated submucosal tissues, they observed rough, irregular vascular lumens, thrombosis, vasodilatation and detached endothelial cells



3. Apoptotic endothelial cells were detected by the TUNEL assay



4. The correlation coefficient between the percentage of apoptotic vascular endothelial cells and OMI at 5 day, 8 day, 14 day, 21 day and 28 day after irradiation was 0.67 ( $P=0.034$ )

Groups	Percentage of apoptotic endothelial cells	OMI
5 day post-irradiation (n=6)	78.3±0.31	1.83±0.41
8 day post-irradiation (n=6)	89.3±0.83	3.37±0.82
14 day post-irradiation (n=6)	83.5±0.41	4.83±0.41
21 day post-irradiation (n=6)	69.3±0.57	4.50±0.55
35 day post-irradiation (n=6)	47.3±0.59	2.50±0.55

5. five to eight days post-irradiation, damage from the Radiotherapy-induced glossitis (based on the OMI) increased as endothelial cell injury increased.
6. At 9 day to 21 day after irradiation, the speed of endothelial cell injury slowed down, but radiation damages of the epithelium reached their peak.



7. In the present study, endothelial cell injury was observed prior to injury of the mucosal epithelium
8. The lumens of the blood vessels were irregular and contained thrombi.
  - A. endothelial cell injury causes mucosal epithelial cell death. The supply of oxygen and other nutrients to the epithelial cells was affected by endothelial cell damage.
  - B. endothelial cells are more sensitive to irradiation than epithelial cells, so endothelial cells are damaged first.

題號	題目
1	Which is not the characteristic of submucosal blood vessels after irradiation under microscopy (A) increased permeability (B) thrombosis (C) detached endothelial cells (D) vascular lumens were smooth on the internal surface
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2	About the mucositis caused by radiation, which one is false? (A) Genetic differences in the rate of tissue apoptosis (B) Microvascular injury from epithelium apoptosis (C) Mucositis will resolve slowly 2~3 weeks after cessation of treatment (D) Manifestation have pain, ulcer, desquamation of keratin
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