Letter to the editor

Role of neutrophil in oral physiology

Sir/ Madam,

Wilgus *et al.,* (1) reviewing positive and negative effects of neutrophil point out that neutrophil kills potential pathogens but can also damage significant tissue of the host. However, in the physiological levels in which it occurs it can be beneficial in promoting wound healing as it occurs in cyclic neutropenia.

Cyclic neutropenia is a disease characterized by cyclical depression of the PMNL count at 21 days intervals. Inherited as an autosomal dominant trait the leucocyte count drops for 5-7 days at regular 21 day intervals. In the interim white and leucocyte counts are normal. During neutropenia there are ragged aphthous like ulcers. When count returns to normal, ulcers heal (2). Histologically during neutropenia there is granulation tissue and absence of neutrophils (2).

It is proposed here that the accumulation of granulation tissue is produced by 2 mechanisms. First microbe induced granulation reaction and second lack of neutrophil collagenase that prevents such accumulation. Drug induced gingival overgrowth (DIGO) is thought to be caused by accumulation of collagen due to deficiency of Neutrophil collagenase (3). Neutrophils also may have a role in the clearing of ulcers as neutrophil counts return to normal. Among other possible mechanism one is possibly through upregulation of integrins on fibroblasts. Fibroblasts are involved in formation of scar tissue during wound healing in which integrins play a role (4).

Neutrophils are found in clinically healthy gingival sulci and constitute 90 % of leukocytes. In addition to microbicidal action there are other functions. These include phagocytosis of debris, immune complexes and foreign particles. Also release of cytokines that regulate fibroblast activity as growth and migration.

It thus appears that neutrophils in physiological levels have an important in role in maintaining the integrity and normal status of oral mucosa and gingivum.

REFERENCES

1. Wilgus, T. A., Roy, S., McDaniel, J. C. Neutrophil and wound repair. Positive actions and negative reactions. Adv Wound Care (Rochelle). 2013; 2 (7): 379- 388.
2. Clinical outline of oral pathology: Diagnosis and treatment, 3rd edition. Edited by Lewis R. Eversole. Lea & Febiger, Philadelphia, Pennsylvania, 1992; 469.
3. Brown, R. S., Arany, P. R. Mechanism of drug induced gingival overgrowth revisited: a unifying hypothesis Oral Dis. 2015; 21(1): e51-e61.
4. Koivistol, L., Heino, J., Hakkinen, L., Lariana, H. Integrins in wound healing. Adv Wound Care. 2014; 3(12): 762- 787.

V. Madhusudhan Rao, Geetha Rani K. S., Jaideep Mahendra Ambalavanan N.*

Dept. of Physiology and Dept. of Periodontology* Meenakshi Ammal Dental College, Alapakkam, Chennai 600 095, Tamilnadu, India.

Email: madhuoxon@gmail.com