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MOLECULAR BIOLOGY AND IMMUNOLOGY OF RECURRENT RECURRENT APHTHOUS STOMATITIS

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ABSTRACT:

the commonly encountered painful ulcerative conditions of the oral mucosa, for which the patients consult oral physicians seeking for treatment are "recurrent recurrent aphthous stomatitis" recurrent aphthous stomatitis; is a frequent situation which is categorized by numerous frequent minute, encircling or oval ulcers with restricted boundaries, reddish haloes with yellow or grey base which occurs in young population .[28] this article intends to throw some light on various aspects of molecular cell biology based etiopathogenesis for "recurrent aphthous stomatitis", as per proposed by enumerous experimentalists, molecular model of etiopathogenesis of recurrent aphthous stomatitis in detail.

INTRODUCTION

"Recurrent aphthous stomatitis" recurrent aphthous stomatitis; is a frequent condition categorized by numerous frequent minute, encircling or oval ulcers with restricted boundaries, reddish haloes with yellow or grey base which occurs in young population.[1,2,28, 29]

ETIOPATHOGENESIS

The etiology of recurrent aphthous stomatitis is unclear. researches have found a hereditary predilection is there for recurrent aphthous stomatitis as revealed by evident relations with gene mapping of "Il-1*b*; Il-6"

in recurrent aphthous stomatitis subjects. in recurrent aphthous stomatitis patients, hereditary history is positive for recurrent aphthous stomatitis in at least one third of recurrent aphthous stomatitis patients. hemoglobin deficiency is found in up to 20% of patients. the ulcers in hiv resemble recurrent aphthous stomatitis. few drugs like nsaids may produce ulcers clinically similar to this disease.[5,7,12,28,33]

1] GENETIC BASIS:

- Sircus et al, 1957 ⇨ suggested atleast 40% of these subjects have a indistinguishable ancestral history of recurrent aphthous stomatitis. [28,33]
- Ship, 1965 ⇨ found out that subjects with a family history of recurrent aphthous stomatitis can develop oral ulcers during childhood and can get affected more severely than persons who are not having any family history. [28,33]
- Ship, 1972 ⇨ chance of developing recurrent aphthous stomatitis in sibling may be predisposed by the parents. [28,33]

A] HUMAN LEUCOCYTEANTIGEN (HLA):

- "Lehner et al, 1982; malmstrom et al", 1983 ⇨a number of relations by means of human leukocyte antigens and recurrent aphthous stomatitis was studied and recommended its association with hla-b12. [23,24]
- Gallina et al, 1985 ⇨ subjects with recurrent aphthous stomatitis the incidence of "Hla-B5" were diminished, but "Hla-dr7" was considerably greater than before. [27,28,33,34,41,42]
- Savage et al, 1986 ⇨ In a study investigated that "Hla class i and ii antigens" show in every stratum of the skin in the initial stages of ulcer most probably enhanced by interferon gamma (ifn-γ) secreted by t-cells. [28,33,36]
- Albanidou-farmaki et al, 1988 ⇨ the incidence of "hla-dr4" was condensed in patients of Greek origin. [28,33]
- Sun et al, 2001 ⇨ a study of "HLA" genome of subjects from China recognized that the frequency of "Hla-dr5; drw8; dqw1" were elevated in mucocutaneous "behcets syndrome". [10,13,15,28,33,38]

B] INTERLEUKINS:

- Yamamoto et al, 1994 ⇨ studied an increase in serum concentrations of "il-6, il-2r and icam" in comparison with control subjects. [1,13,39]
- Buno et al, 1998 ⇨ the concentration of il-2, ifn-c and tnf-a mrna are elevated in recurrent aphthous stomatitis. [28,33,40]
- Bachtiar et al, 1998; ⇨ in a study they proposed that an unrestricted or too much making of "il-1b or il-6" (e.g. chronic irritants) may be an explanation to the formation of recurrent aphthous stomatitis. [13-38] it

has been studied that cell-mediated immunity is altered in subjects with "recurrent aphthous stomatitis". subjects include high concentration of circulating blood cd8+ , lymphocytes, decreased cd4+ t lymphocytes, though concentrations of "(cd3+) lymphocytes is reduced (sistig et al, 2002)". [28,33,41]

- Bazrafshani et al, 2002 ⇨ they found out that there is no alliance was seen in polymorphic forms of tnfα, tnfβ or vitamin d receptor genes. in another investigation of 95 subjects with recurrent aphthous stomatitis in UK.[28,33]

C] T-LYMPHOCYTES

- Lehner et al 1967; proposed that elevation in cd-t cells, crucial in adcc. researchers pointed out that marginal blood wbc of subjects with recurrent aphthous stomatitis may exhibit elevated cyto toxicity towards oral mucosa,[13]
- Savage et al, 1985 ⇨ they studied that the ulcer stage has connection with the manifestation with "cd4+ cytotoxic suppressor cells" and changed by "cd4+ cells" throughout remedial. "polymorphnuclear lymphocytes (pmnl)" too become visible inside the lesion. [28,33,43]
- Savagi et al 1986 studied that icam-1 is present within sub epithelial capillaries and veins indicative of movement of WBC into the subepithelial of "recurrent recurrent aphthous stomatitis recurrent aphthous stomatitis". [28,33,36,44]
- Pedersen et al, 1989 ⇨ suggested an important amount of cd4+ (cd29+4b4+) "memory" t lymphocytes. [28,33,45,46,447]
- Scully et al (1998), (2006) investigated the subjects with recurrent aphthous stomatitis encompass an augmented amount of cd cells in comparison with fit control patients and recurrent aphthous stomatitis patients. The cluster of differentiation "t-cells" have a pivotal function in "antibody-dependent cell-mediated cytotoxicity (adcc)", but the cause for elevated production of cd t cells in recurrent aphthous stomatitis is not understood. [28,33]

D] IMMUNOGLOBULINS

- Scully et al, 1983 investigated that "serum immunoglobulin (ig)" concentrations are usual and there is increase in serum Iga, Igg, Igd And Ige in recurrent aphthous stomatitis patients. [28,33,49,50]
- Schroeder et al, 1984 studied that circulating immune complexes are not present in recurrent aphthous stomatitis, immunological findings take place in biopsy samples particularly in the "stratum spinosum" [28,33,53,54,55-60]

- Vicente et al, 1996 studied in spanish patients that a considerable decrease in "Igg2 (crucial in bacterial immunity)" were seen in investigation of subjects Spain country. [28,33,56]
- Sistig et al, 2002 investigated that ulcer stage of recurrent aphthous stomatitis, the saliva concentration of "Igg1-4" as well as "Iga1 and Iga2" may can get elevated, but levels of "Iga2, Igg1, Igg3" stay elevated at the beginning period of illness.[41-50]

E] NATURAL KILLER (NK) CELLS

- Thomas et al, 1990 ⇨ they proposed that the function of natural killer cells is uncertain in the pathogenesis of recurrent aphthous stomatitis. [28,33]
- Sun et al, 1991 ⇨ they proposed that the function of nk cells can be decreased throughout flare up of major "recurrent aphthous stomatitis" and in the ulcer stage of minor recurrent aphthous stomatitis [28,33,63]
- Pedersen and Pedersen in 1993 studied that in recurrent aphthous stomatitis levels of periphery blood natural killer cells may be elevated or alike to those of control patients and nk cells "e.g. cd16+, cd56+ and cd14+"are not distorted in recurrent aphthous stomatitis. [28,33,57]

F] TUMOR NECROSIS FACTOR (TNF) -α

- Taylor et al, 1992 investigated that unstimulated periphery blood wbc of subjects with RAS make much increased concentration of TNF-α than healthy controls. [28,33,59]
- Natah et al, 2000 found out that the localised assembly of TNF-α is elevated in recurrent aphthous stomatitis patients than traumatic ulcers. [28,33,60]

SUMMARY AND CONCLUSION

in the past 2 decades various nucleic acid techniques like pcr are used by various research workers to study the etiopathogenesis of recurrent aphthous stomatitis. all these research works have suggested that recurrent aphthous stomatitis is more commonly associated with increase in frequency of hla-linked genetic factors. hence suggesting the positive and strong connectivity with genetic basis, but this not yet 100% proved. hence, exact etiology has to be still made clear by employing various technologies in the various experimental studies, utilizing suitable sample size and methodologies.

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