THE IMMUNOLOGICAL ROLE OF ADHESION MOLECULES

ESSAY

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the Master Degree in Clinical Pathology

By

MANAL WILLIAM EBEID
M.B.,B. Ch.

SUPERVISED BY

PROF. DR. MONA MOHAMED RAFIK
Prof. of Clinical Pathology
Faculty of Medicine, Ain Shams University

Dr. HALA AHMED TALKAHN
Assis. Prof. of Clinical Pathology
Faculty of Medicine, Ain Shams University

Dr. RANDA REDA MABROUK
Lecturer of Clinical Pathology
Faculty of Medicine Ain Shams University

FACULTY OF MEDICINE
AIN SHAMS UNIVERSITY

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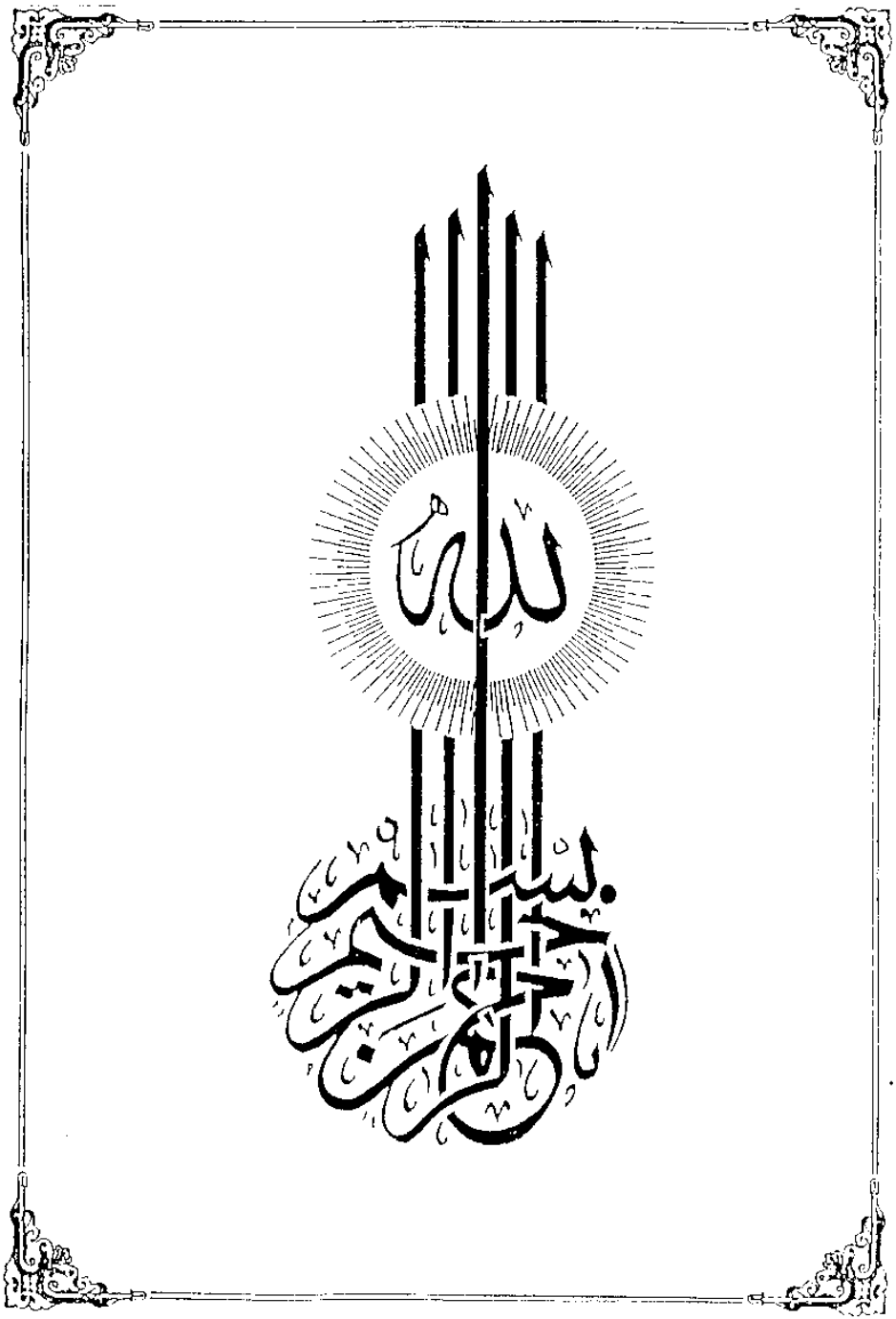

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Cellular adhesion and recognition mechanisms are among the most basic requirements both for the evolution of multicellular organisms and for the immune response. Discovery of receptors on the cell surface involved in cell-cell and cell-substrate interactions has been a key factor in understanding the mechanisms underlying inflammation and immune response ***(Lachmann et al., 1993 and Springer, 1994).***

Intercellular adhesion molecules are membrane-bound proteins which allow one cell to interact with another ***(Springer, 1990).*** Often these molecules traverse the membrane and are linked to the cytoskeleton, so that the cell can use them to gain traction on other cells, or on the extracellular matrix, as they move. They play an important role in acute inflammation and are important in migration of neutrophils, monocytes and lymphocytes to the site of inflammation. ***(Roitt et al., 1993).***

Roitt et al. (1993) presented the different mechanisms by which cells can modulate their interactions with other cell types (Fig. 1). It is either by:

1. Increasing the number of adhesion molecules on the surface such as lymphocyte function associated antigen (LFA-1) following cell activation.

2. Many cells hold stores of adhesion molecules which can be rapidly moved to cell surface, within minutes following cellular activation.

3. Endothelial cells at sites of inflammation may synthesize new adhesion molecules.

4. Recognition of adhesion molecules on the cell surface may result in the formation of high avidity patches.

In practice, cells may use several mechanisms and affinity changes may follow the initial interaction between the cells.

AIM OF THE WORK

To review the classification of adhesion molecules and their function in health and disease.

Modulation of leucocyte adhesion

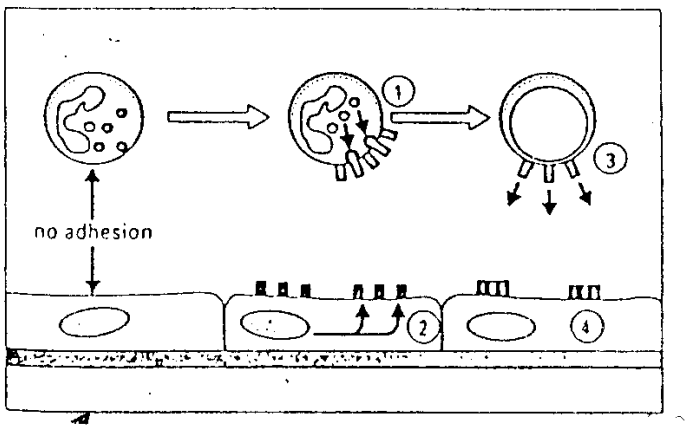

Fig. 1

Ways in which leucocyte binding to endothelium may become enahcned.

Quoted from ***(Roitt et al., 1993).***