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CLINICAL ARTIFICIAL INTELLIGENCE

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Background: Erythrocytes Dynamic Antigens Store (EDAS) is a new discovery [1]. EDAS consists of self-antigens and foreign (non-self) antigens. In patients with infectious diseases, Dementia disorders or malignancies, antigens of infection microorganism, Amyloid Protein Precursor (APP), or malignant tumor exist in EDAS. In patients with autoimmune disorders, some self-antigens concentrations are decreased in EDAS.

Objective: Storing EDAS of normal individuals and patients in a database has, at least, two benefits. First, EDAS can be mined to determine biomarkers representing diseases which can enable researchers to develop a new line of laboratory diagnostic tests and vaccines. Second, EDAS can be queried, directly, to reach a precise diagnosis without the need to do many laboratory tests. The target is to find the minimum set of proteins that can be used as biomarkers for a particular disease. Further, this application will help to discover new disorders and guide their treatment.

Methods: A hypothetical EDAS is created [2]. Hundred-thousand records are randomly generated. The mathematical model of hypothetical EDAS together with the proposed techniques for biomarker discovery and direct diagnosis are described. The different possibilities that may occur in reality are experimented.

Results: Biomarkers' proteins are identified for pathogens and malignancies, which can be used to diagnose conditions that are difficult to diagnose.

Conclusions: The presented tool can be used in clinical laboratories to diagnose disease disorders.

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