Abstract

The incidence of *emerging diseases* is obvious rapidly increasing and it may have existed previously, such as Dengue Haemorhagic Fever (DHF) and specific factors precipitating of the diseases can be identified in Indonesia population .

These include environmental changes, demographic factors, host immunity, microorganism variant and drug resistance suggesting that infection will continue to emerge, probably increase and emphasizes the urgent need for effective surveillance

The **Immunology** approach of emerging diseases has been advanced on two major front. First, the elucidation of the basic mechanisms associated antigen recognition, elimination, rejection and immunological protection from recurrence. Second, the application of the knowledge of immunological memory to diseases as a tool in order to solve the clinical problem (diagnostic, therapeutic and prevention).

Over expressed ***emerging pathogens*** such as molecularly defined ***mutated antigen***; this antigen as a target of specific immune reaction and has been encountered as a danger signal. The current studies have shown that few immune competent cells (activated T cells and B cells) are **exposed** to **antigen**,

The immune consequence of infectious tissue induced Major Histocompatibility Complex (MHC) / Human Leukocyte Antigen (HLA) molecules expression on antigen presenting cell and have also shown, that an immunological reaction occurs in all organs in response to a number of diseases.

However, most infectious diseases express MHC/HLA class II molecules, in order to recognize the new mutated antigen and also express the MHC/HLA class I molecules in order to eliminate those antigen.

Progress in the genetic dissection of infectious diseases will also come from the complementary analysis of the various biological and clinical phenotypes associated with a given infectious agent, strongly suggesting that **host factors** play an important role in **susceptibility or resistance to infection.**

In order to know the regulation process between different types of pathogen and the host immune system, as well as the regulation factor of ***the cross talk*** between the different components of the immune response in human as the host, it is important to get an understanding of **the immune genetic system.**

These research work is aimed at the locating and identifying the HLA class I which encode the protein as immune-component to be involved in the pathogenesis of DHF as a viral infection base on the examination on 20 DHF patient and have already examined the HLA-A, -B as HLA class I with the *DNA typing-PCR*. The results analysis with *Chi square with Yate 's Correction and the relative risk (Wolf rule)* is HLA-A*11,-A*24 and HLA-B*15,-B*18 has specific association with DHF on Indonesia population in East Java.

The evidence of the influence of immune genetics to the emerging diseases is provided by the following observations :(1) the level of infection often differs greatly among infected subjects, (2) some infected subjects do not develop clinical disease, (3) the clinical manifestations of disease (severity, time to onset, duration of disease etc) may differ greatly among symptomatic patients.

This finding opens the path to develop effective means of immunotherapy and improved the diagnosis for lesions, in order to apply the current strategies for the developing of immunodiagnostic, immunotherapy-based treatment through a infected target cell or developed a new effective vaccines

Key words : Immune genetic – Mutated Antigen – MHC- immune pathogenesis

Abstrak

Angka kejadian "*emerging diseases*" di populasi Indonesia cenderung meningkat dibandingkan beberapa saat yang lalu misalnya Demam Berdarah Dengue atau dikenal Dengue Haemorhagic Fever (DHF) dan sangat mungkin mempunyai korelasi dengan faktor yang spesifik berperan terlibat dalam proses kejadian sakit.

Interaksi factor eksternal seperti perobahan lingkungan , factor demographic, ***host immunity, microorganism variant*** dan resistensi obat pada penyakit infeksi sangat mungkin meningkatkan dan berperan dalam perjalanan penyakit ksi yang pertama maupun infebaik pada infeks yang berulang

Pendekatan **Immunology** pada Demam Dengue (DD) rmelalui dua sisi. Pertama, pemahaman mekanisme dasar *associated antigen recognition, elimination, **rejection*** and proteksi imun. Kedua, aplikasi pemahaman tentang *immunological **memory*** yang bermanfaat bagi kepentingan pembaruan diagnostik, terapetik dan prevensi.

Ekspresi yang luas tentang ***emerging pathogens*** sebagai target molekul yang mengalami proses ***mutated antigen***; merupakan suatu *danger signal* yang harus dicermati. Penelitian mutakir memperlihatkan bahwa *mmune competent cells* seperti limposit T dan limposit B terpapar dengan virus DHF sebagai **antigen**,

Molekul yang terlibat mengenal antigen virus DHF tersebut adalah *Major Histocompatibility Complex (MHC) / Human Lekocyte Antigen (HLA) molecules* yang akan terekspresi pada sel yang disebut APC (antigen presenting cell) dan selanjutnya akan mengalami proses imun pada tubuh hospes.

Pada kejadian penyakit infeksi ekspresi *MHC/HLA class II molecules*, bertujuan mengenal *the new mutated antigen* dan selanjutnya akan mengekspresikan *the MHC/HLA class I molecules* untuk upaya eliminasi antigen

Kemajuan penelitian factor genetik pada penyakit DHF sebagi penyakit infeksi berpijak pada analisis berbagai unsur biologik dan *clinical phenotypes* yang berkorelasi dengan kejadian infeksi virus menunjukan bahwa factor genetic hospes sangat berperan terhadap kerentanan terhadap kejadian sakit karena infeksi.

Upaya penelitian ini untuk memahami proses regulasi imunregulation dari berbagai variasi perbedaan patogen dan system imun hospes, misalnya ***the cross talk*** berbagai komponen imun , misalnya **sistem immune genetik .**

Fokus penelitian ini untuk mengidentifikasi molekul HLA –A, -B, yang termasuk ruang lingkup gen yang mengendalikan sistem imun pada hospes (host) dan mampu berekspresi sebagai ***susceptibility gene*** yang mempunyai korelasi / asosiasi yang bermakna dengan terjadinya DD pada host. Sasaran penelitian adalah populasi penderita yang mendapat infeksi DD yang berulang dan jumlah sampel yang akan diteliti sebanyak 20 sampel darah penderita

Metode pemeriksaan sistem HLA-A,-B dengan uji *DNA typing- PCR* dan hasiln deteksi gene tersebut akan analisis selanjutnya dengan metode *chi-squre* koreksi dari *Yate's*. Nilai peluang sesorang untuk mendapatkan penyakit DD/DBD dinyatakan dengan menguji *resiko relatif* dengan rumus dari *Wolf's*.

Hasil penelitian adalah jenis HLA-A*11,-A*24 dan HLA-B*15,-B*18 yang spesifik dan mempunyai hubungan yang bermakna dengan kejadian sakit DDpada populasi Indonesia di Jawa Timur. Hasil identifikasi gen HLA yang secara statistik mempunyai asosiasi dengan kejadian sakit DD/DBD dimanfaatkan sebagai faktor determinan yang potensial perlu diperhitungkan dalam strategi rekayasa vaksin

Kata kunci : Immunogenetik – *Mutated Antigen* – *MHC*- immunopatogenesis