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The significance of HLA typing in transplantation

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ABSTRACT

Although genetic admixture has recently occurred among different ethnic groups with the increased rates of migration to big cities, information about HLA allele distribution in different ethnic groups in Iran may still be helpful to improve the selection of transplantation donor candidates from certain ethnic groups which are genetically closer to the recipient. Because the data reported by Einollahi et al. reflect a large HLA disparity among Iranian kidney recipients, any improvement could play a small yet important role in organ transplantation.

Implication for health policy/practice/research/medical education:

To reduce the risk of allograft rejection, transplantation from HLA-matched donors is recommended. Due to the high cost of HLA typing, limiting the number of donors based on genetic distances among ethnic groups is potentially useful. Anthropological data may help to choose better donor candidates from ethnic groups which are genetically closer to the recipient.

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Every individual may be exposed to different antigens during life, and different HLA molecules in each individual guarantee the induction of immune responses against antigens. Because HLA loci are limited in each individual, the immune response to infectious agents is supported by HLA gene diversity in the population. Anthropological data show that the distribution of HLA alleles is highly variable among differ-

ent populations (1). The high diversity of HLA genes, which increases the potential response to antigens, is simultaneously an obstacle to organ transplantation. Because HLA molecules are highly immunogenic, HLA mismatch is considered the main cause of alloreactive T-cell activation, which may followed by graft rejection in solid organ transplantation or graft-versus-host disease in bone marrow transplantation (2). To

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reduce the risk of allograft rejection, transplantation from HLA-matched donors is recommended. However, matching is not possible for all cases, and because of the increasing likelihood of HLA mismatches, high doses of immunosuppressive drugs must be used which in turn can increase the risk of recurrent infections or malignancies. Different methods of HLA typing are available. Microcytotoxicity assay is one of the conventional methods which is still used in some centers. Because of their higher resolution, DNA-based methods have recently been considered for HLA typing.

In recent years, Iran has experienced many improvements in organ transplantation. In addition to liver and kidney transplantation, which are routinely performed in different centers around the country, bone marrow transplantation is done at certain centers (3, 4). Iran is currently populated by various ethnic groups. The HLA gene pool is limited in some parts of the country because of geographical isolations or intraethnic marriages. However, in recent decades genetic admixture has occurred among different ethnic groups as a result of the increased rate of migration to big cities. Data reported by Einollahi et al. in this issue reflects considerable HLA variation among 512 kidney recipients from different transplantation centers in Tehran (5). Anthropological studies can be helpful to determine the genetic distances between subpopulations. Such data may help to choose better donor candidates from ethnic groups which are genetically closer to the recipient. Fortunately, data in this area are now available (6), and more information will be provided in the near future.

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