

Subgroups of adult-onset diabetes by cluster analysis and their characteristics in Korean population

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Background/Aims: Type 2 diabetes presents significant heterogeneity in clinical presentation by race and culture. We aimed to classify adult-onset diabetes in Koreans by cluster analysis based on the recent European novel data-driven cluster classification, and to examine the clinical implications and outcomes of this clustering.

Methods: This data-driven cluster analysis included 9,568 patients with adult-onset diabetes with six parameters including glutamate decarboxylase antibodies, age of onset, body mass index, glycated hemoglobin, and homoeostatic model assessment 2 estimates of β -cell function and insulin resistance.

Results: Patients were clustered into 5 subgroups: 1.3% were in the severe autoimmune diabetes (SAID, cluster 1) subgroup, 36.6% were in the severe insulin-deficient diabetes (SIDD, cluster 2) subgroup, 4.9% were in the severe insulin-resistance diabetes (SIRD, cluster 3) subgroup, 20.2% were in the mild obesity-related diabetes (MOD, cluster 4) subgroup and 37.1% were in the mild age-related diabetes (MARD, cluster 5) subgroup. When compared with the European population, the proportion of SIDD subgroup was higher in Korean population. Although the differences in variables between groups were similar, Korean patients with diabetes had earlier onset, lower body mass index and lower homoeostatic model assessment 2 estimates of insulin resistance values. As the duration of diabetes increased, the proportion of SIDD subgroup increased and that of SIRD and MOD subgroup decreased. (p for trend < 0.001).

Conclusions: The European diabetes reclassification system was applicable to Korean patients with adult-onset diabetes. The proportion of patients with SIDD subgroup was relatively high, and it showed a tendency to increase with increasing duration of diabetes.

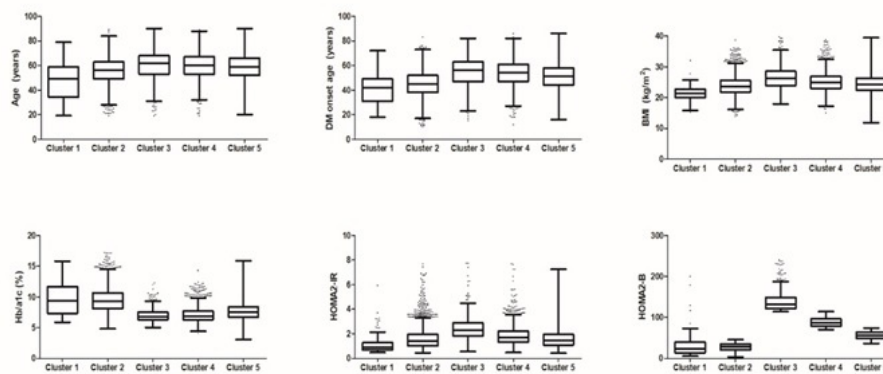


Fig1. The characteristics of Korean patients with adult-onset diabetes classified by cluster analysis^{4,5}

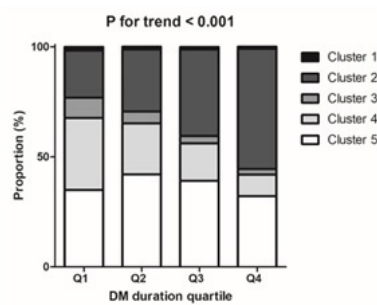


Fig2. Proportion of each cluster according to the diabetes duration^{4,5}

Q1, quartile 1 (diabetes duration < 2 years); Q2, quartile 2 (diabetes duration of 2–5 years); Q3, quartile 3 (diabetes duration of 6–10 years); Q4, quartile 4 (diabetes duration > 10 years).^{4,5}