A heterozygous polymorphism changing GGT<sup>40</sup> (Gly) to AGT<sup>40</sup> (Ser) (Gly40Ser) in the glucagon receptor gene was reported to be associated with non-insulin-dependent diabetes mellitus (NIDDM) and a possible involvement of this polymorphism in impaired glucose tolerance (IGT) was also suggested in a French population. To replicate this finding we screened 311 unrelated NIDDM patients, 101 unrelated individuals with IGT and 306 control subjects for the presence of the Gly40Ser polymorphism by use of polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) in a Finnish population. None of the NIDDM or IGT patients had this polymorphism. Instead, four of the control subjects (1.3%) were heterozygous carriers of the polymorphism (NS). The age, body mass index, 2 h glucose, 2 h insulin, and incremental insulin area of the four subjects with the polymorphism were similar to those of the control subjects homozygous for the wild type. Taken together, the data do not support the suggested involvement of the Gly40Ser polymorphism in impaired glucose tolerance and the hypothesis of an association between NIDDM and the glucagon receptor gene in this population.