Leptospirosis is an infectious disease of wide global distribution, which is endemic in Argentina. The objective of this study was to obtain the genetic profiles of Leptospira spp. strains isolated from clinical cases of dogs in the province of Buenos Aires by the multiple-locus variable-number tandem repeat analysis (MLVA). Eight isolated canine strains were genotyped by MLVA, obtaining the identical profile of Leptospira interrogans serovar Canicola Hond Utrecht IV in the strains named Dogy and Mayo. The strains named Bel, Sarmiento, La Plata 4581 and La Plata 5478 were identical to the profile of the genotype of L. interrogans serovar Portlandvere MY 1039. The strain named Avellaneda was identical to the genotype profile of L. interrogans serovar Icterohaemorrhagiae RGA and the strain named SB had the same profile as the L. interrogans serovar Pomona Baires genotype and was similar to the profile of serovar Pomona Pomona genotype. It would be useful to include a larger number of isolates from different dog populations in various provinces of Argentina and to characterize the genetic profiles of the strains circulating in the country. The information obtained will be useful for the control of leptospirosis in the dog population. © 2014 Asociación Argentina de Microbiología. Published by Elsevier España, S.L. All rights reserved.