Abstract: In this study, a seismic tomography technique was applied to arrival time data generated by 6549 crustal earthquakes in central Anatolia recorded by local seismic networks in order to study the 3-D velocity and Vp/Vs structures and their relation with seismic activities occurring in the study region. The relatively equal and large number of both P- and S-wave arrival times comprising a total of 51,650 arrivals and the uniform distribution of the recording stations imply that the obtained velocity anomalies are reliable features down to a depth of 40 km. The inversion results indicate the existence of strong lateral heterogeneities in the crust and uppermost mantle beneath central Anatolia. Low-velocity anomalies are imaged the existing volcanoes and the active fault segments beneath the study area. Higher-than-average Vp/Vs ratios are widely distributed indicating the possible existence of over-pressurized fluids that may be responsible for the triggering of the large crustal earthquakes along the north and east Anatolian fault zones. With obtained results, it is revealed the potential field caused deformation energy in the region. The obtained the velocity and Vp/Vs values are consistent with previous geophysical measurements conducted beneath central Anatolia and give understanding of the current seismotectonic activities in this region. Keywords: Central Anatolia, Crustal Structure, Seismic Tomography, Seismic Velocity Structure, Vp/Vs Ratio.