Introduction: Magnetic resonance imaging (MRI) is able to detect spondylotic cervical cord compression that could cause cervical spondylotic myelopathy (CSM) but could also remain asymptomatic (“asymptomatic spondylotic cervical cord compression” — ASCCC). The prevalence of both ASCCC and CSM is not known and data in the literature differ widely. Cervical cord impingement or compression was previously found in 27% of subjects accidentally examined with MRI; in individuals older than 64 years the prevalence reached 30% (Teresi et al. 1987). Aim of this study was to estimate the prevalence and MRI characteristics of both ASCCC and CSM in a general population above the age of forty.

Methods: One hundred and eighty four randomly chosen healthy volunteers, recruited irrespective of the presence of signs of CSM, 93 women and 91 men, aged 66 (median), 40-80 (range) years participated in the study. All underwent MRI examination on a 1.5 T device using conventional sequences, including T1, T2 and STIR (short-tau inversion recovery) images in the sagittal plane and axial T2 weighted gradient-echo scans and diffusion tensor imaging coherently covering 5 segments of cervical spine from C2/C3 to C6/C7 levels. The clinical status of patients/volunteers was blinded for a neuroradiologist who evaluated cervical spine MRIs. Imaging criteria for cervical cord compression (measured at level of maximum compression level) was defined as:

- Impingement, ie. focal concave defect of spinal cord contour and with preserved subarachnoid space (type I);
- Flat or circular compression with partially preserved subarachnoid space (type IIA) or with lost subarachnoid space (type IIB).

Cross-sectional spinal cord area, anteroposterior and laterolateral diameter of cervical spinal cord, compression ratio (anteroposterior/laterolateral spinal cord diameter), the presence of spinal cord T2 hyperintensity and of cervical stenosis (anteroposterior diameter of cervical canal < 12 mm) was also detected. Subject with MRI signs of cervical cord compression were subsequently examined clinically.
Results: MRI signs of cervical cord compression were found in 99 individuals (53.8%). Clinical signs of symptomatic CSM were found in 2 cases (1.1%), while in 97 cases (52.7%) the compression was asymptomatic. Isolated focal impingement (type I) was present in 31 cases (16.8%), wide compression of type IIa in 47 subjects (25.5%), and of type IIb in 21 subjects (11.4%). Decreased cross-sectional area at the level of compression < 50 mm² was detected in 9 cases (4.9% including two cases with CSM), and T2 hyperintensity in 5 subjects (2.7%; one with symptomatic myelopathy). There were significant differences in some imaging parameters between subgroups with and without signs of compression, especially in compression ratio with lower values in subgroups with compression.

Conclusion: Prevalence of asymptomatic spondylotic cervical cord compression in a population over the age of 40 years is higher than previously reported. In most cases, compression is asymptomatic, less severe, and not accompanied with significant decrease of CSA, presence of T2 hyperintensity and change in DTI parameters compared with findings in subjects without compression. The predictive significance of different types of compression remains to be established in future prospective evaluation of larger group of subjects.