Thirty-four patients with intramedullary space-occupying lesions or cord compression syndromes were examined with a resistive and two different superconductive magnetic resonance (MR) imaging units. Studies were done primarily by the spin-echo (SE) technique and in the majority of patients different pulse sequences were used. Images with short echo-time (TE) and short recovery-time (TR) were best for demonstration of spinal cord anatomy, for depicting cystic portions in intramedullary tumours and for showing syringomyelia. Solid intramedullary tumours showed normal cord signal intensity. Images with prolonged TE and TR predominantly enhanced CSF signal intensity and, to a more considerable extent, solid intramedullary tumours. Thus, the diameter of the subarachnoid space and the presence of a solid intramedullary tumour, not concomitant with a significant enlargement of the spinal cord, could only be recognized on these prolonged SE images. Major advantages of MR in comparison to CT are that the spinal cord can be imaged in the sagittal plane and that beam hardening artifacts do not occur; in comparison to myelography the cord can be imaged directly by MR. Partial volume is a major limitation of MR, not only in the preferably applied sagittal plane. The choice of slice thickness adequate to the diameter of the lesion and straight positioning of the patient for sagittal single slice midline images are fundamental for reliable MR investigations. Another
limitation to MR is that cortical bone gives no signal. The actual diameter of the spinal canal therefore cannot be correctly appreciated and consequently it was difficult or impossible to assess spinal stenosis.