Ultrasonography is the method of choice for imaging the peripheral nervous system [1]. Clinically, imaging especially of small peripheral nerves is relevant for the following purposes: (i) their localization for avoiding harm during surgical or other invasive procedures [2–4], (ii) the targeting of therapeutics or surgical procedures at these nerves [5–9], and (iii) the measuring of their caliber for assessing compressive, inflammatory or degenerative neuropathies [12–18].

In the recent decade high-frequency (15–25 MHz) and ultrahigh-frequency (30–70 MHz) ultrasound probes became available for medical diagnostic use, that allowed, along with advanced image post-processing, for the improved visualization of small nerves and nerve fascicles (Table 1) [19]. This has opened the door to a more precise diagnostic assessment of small subcutaneous sensory nerves, especially the detection of its entrapment or traumatic lesion [20–23]. High-resolution ultrasonography also allows for the detection of gender-related differences of nerve calibers and may reveal fiber-type specific changes of small nerves with aging and in neurodegenerative disorders [24]. Local inflammation of small nerve branches has been visualized [25]. First data suggest that ultra-high resolution ultrasonography may enable a more detailed assessment of inflammatory neuropathies thanks to the better display of single nerve fascicles [19]. High-resolution ultrasound-guided anaesthetic blockade of small subcutaneous nerves is increasingly applied to relieve and prevent local pain [26, 27].

Nerve ultrasound is a good example for the swift transfer of technological advances into clinical applications by multiple clinical disciplines. Many more new diagnostic and therapeutic applications of nerve ultrasonography can be expected.

## References


