Applications of Ultrasonography in Female Lower Urinary Tract Symptoms: Diagnosis and Intervention

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Abstract

Lower urinary tract symptoms (LUTS) are a common health problem causing considerable inconvenience to many women. Moreover, they are non-specific and can be caused by a large number of disorders. A thorough evaluation, including physical examination, imaging studies, and urodynamic investigation of the lower urinary tract, is crucial for appropriate management of bothersome symptoms. Ultrasonography has the advantages of non-invasiveness, reproducibility, no radiation exposure, and low cost. With the use of a high-resolution transducer, pelvic organs can be demonstrated clearly on ultrasonography. In addition, three-dimensional sonography provides a clear demonstration of the spatial orientation of the female lower urinary tract. Both color and power Doppler scanning can not only reveal the vascular flow in pelvic organs, but also demonstrate urinary flow. Ultrasonography has dual functions in the management of female LUTS: diagnosis and intervention. It may help physicians to recognize the anatomic characteristics of specific pelvic floor disorders, to explore the pathophysiologic mechanism responsible for pelvic floor dysfunction, and to assist in the surgical management of LUTS with minimal invasion. Since female LUTS may originate from gynecologic or nongynecologic conditions, it is more convenient and helpful to obtain transvaginal and introital sonograms at the same time by using an endovaginal probe.