

Evaluation and management of urolithiasis: Advancing technology and changing concepts

Among the articles published in *BJU* in the last two-three years, ten outstanding articles have been selected about stone disease with the potential to influence our clinical practice. These articles cover the epidemiology, etiopathogenesis and natural history, diagnosis and treatment of stone disease, the comparison of different approaches in urolithiasis, and education.

The study by Hsi et al. broadens our perspective on biomechanical approaches and tissue level to understand stone disease and develop future projects for its aetiology. "Upstream mineral formations initiate downstream Randall's plaque", this well-prepared article with its illustrative figure should be read.

An ultrasound-based cross-sectional study by Zeng et al; it points out the serious variability in epidemiological study results and the inadequacy of previous studies with self-reported patient questionnaires. Especially in countries with a large area, stone disease shows differences between regions. This is an important epidemiological study from China, which constitutes 1/5 of the world's population. Ultrasonography is the ideal imaging method for renal pathologies with low cost, accessibility, functional assessments, and lack of ionizing radiation. However, in this study, Ganesan et al. address the inadequacy of ultrasound in making a treatment decision and makes an essential contribution to the literature.

The management of asymptomatic renal stones has long been unclear. Darrad et al.'s study is important to provide an objective measure, while counselling patients with asymptomatic stones about the risk of stone-related sepsis and mortality. The study helps to highlight the importance of serial reviews with imaging to measure stone growth velocity, particularly in younger patients, and we hope that these findings will guide us in counselling patients who present with asymptomatic calyceal stones.

It has been 40 years since the introduction of SWL for the first time and, with technological improvements, it is still one of the most important options in the treatment of stone patients. The study of El-Nahas et al. has been conducted with a proper study design, a randomized controlled trial to test the protective effect of three medications on the protection of the kidney against possible deleterious effects of SWL.

This special Virtual Issue includes articles about PCNL. In the study by Rizvi et al., PCNL results and the chemical composition of stones are given in a large number of patient cohorts who have undergone PCNL. The chemical composition of stones showed that 41% were pure and 59% were mixed stones. The

majority of the stones were composed of calcium oxalate. Their findings contrast with those reported from Europe, where, of 10 438 calculi, 6.9% were pure stones and the rest were mixtures. And the reason for this is discussed in the article. Radiation exposure is the limitation of endoscopic urological interventions in all aspects. In which patients should only ultrasound, fluoroscopy or combined technique during PCNL be used? The work of Zu et al. guides this issue. On the other hand, urologists cannot give up fluoroscopic-guided access and this Virtual Issue also includes a step-by-step educational video animation article on fluoroscopic-guided puncture in PCNL.

RIRS is increasingly performed and has a good safety profile in the surgical management of 1-2 cm stones. However, there are also essential developments in percutaneous interventions. After SMP was first introduced in 2012 the new-generation system with an irrigation-suction sheath to improve irrigation and stone extraction, which represent a revolutionary approach to the mini-PCNL technique usage becoming widespread. This randomized controlled study reveals the superior and inferior sides of both techniques.

In addition to these valuable articles, this Virtual Issue includes a high-quality Cochrane systematic review regarding medical expulsive therapy for ureteric stones.

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