




Predict success of shock wave lithotripsy was still interesting and challenging

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Dear Editor,

We would like to present comments on “Outcome groups and a practical tool to predict success of shock wave lithotripsy in daily clinical routine” recently published in WJU [1]. Exactly, we appreciate their perseverance and determination in this old topic, and to be honestly, it is still interesting and challenging to predict success following ESWL.

In the referred study [1], a model based on four predictors, including mean attenuation values (MAV), stone size, skin-to-stone distance (SSD) and presence of an indwelling stent, was established to improve prediction of success following SWL. It's no doubt that, fragmentation of stones by shock wave and passage of fragments are the key procedures for the success of SWL. Fortunately, all the above risk factors or related factors were enrolled in the study [1]. However, more details should be well studied to polish this old topic with great significance in daily clinical practice.

First, the stone “hardness burden” is the first obstacle in the procedure of stone fragmentation by shock wave, rather than the SSD, since the current SWL machine is powerful enough that the shock wave energy attenuation is barely perceptible no matter the SSD. The stone “hardness burden”, gotten from stone harness multiple volume, would be more objective to evaluate the whole SWL procedure.

On one hand, the stone hardness is the key risk factor in stone fragmentation by shock wave. But, the methods to measure MAV vary in different studies. In the study of

EI-Nahas et al. [2], MAV was calculated by measuring CT attenuation in the upper, middle and lower axial planes. While, Alexandra et al. [3] selected three consistent, small, non-overlapping regions of interest in a same plane to calculate the MAV. The referred study [1] only selected one region of interest to calculate the MAV. However, if only area of interest is randomly selected, a certain selection bias would bring subjective error in MAV calculation procedure. Exactly, the CT information system would measure the MAV of whole stone point by point, and calculate the mean MAV intelligently, which would objectively represent the whole stone. On the other hand, the stone volume rather than the largest diameter was required to evaluate the stone burden. Similarly, the stone volume could be calculated by the CT information system intelligently as in the same way to calculate MAV.

Second, the passage of fragments following SWL should also be well evaluated. A serial of studies have focused on the renal collecting system anatomy, especially the lower pole, since the gravity must be taken into account. The infundibulopelvic angle (IPA), lower infundibular length (IL), lower infundibular width (IW), caliceal pelvic height (CPH), etc. has been well studied [4], and a broad consensus had been reached.

The delivery capacity of ureter is also the risk factor of stone fragments passage. This view was well verified by the fact that children were more likely to expel stone fragments following SWL, since their ureteral smooth muscle was relatively weak, the stone passing ability was stronger than adult. Recently, another interesting study investigated the ureteral wall volume as the only significant independent predictor of SWL outcome, rather than ureteral wall thickness or ureteral wall area [5]. However, the presence of an indwelling stent would jeopardy the ureteric peristalsis and thus worsening stone fragments passage following SWL, even though the JJ stent would passively dilate the ureter [5, 6].

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Anyway, the referred study arouses our interest in this old topic and inspires us to conduct more scientific studies thus to guide the daily clinical practice.

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Declarations

Conflict of interest The author declares that he has no conflict of interest.

Ethical approval This article does not contain any studies with human participants performed by the author.

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