

Doppler Ultrasonography in the Management of Urinary Stone Disease

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Doppler ultrasound (DU) examination of the ureterovesical jet (UVJ) is a noninvasive, accessible and informative examination method. In patients with ureteral obstruction, it allows viewing UVJ without fluid intake. Additionally it makes possible to appreciate the localization of the ureteral meatuses and qualitative assessment of UVJ, its view, location, frequency, intensity and angle. The aim of the study was to determine the value of DU in the management of reno-ureteral lithiasis and dynamic evaluation of obstructive uropathy. Between October 2009 and January 2010, 45 patients with renal colic have been evaluated, aged between 33 and 58 years (mean 45.5 years), 33 men and 12 women. Examination of patients was in two stages: simple ultrasonography (Grey Scale) and DU of the bladder for evaluation of presence or lack of UVJ. DU was performed daily. All patients were divided into 2 groups: I. Group - 13 patients with signs of total renal obstruction (unilateral). II. Group - 32 patients with signs of partial renal obstruction. In I group, we assess UVJ missing and dilation of the renal pelvis and calyces on the affected side. In 2 patients on simple renography were detected stones in the pielo-ureteral segment (about 10 mm in diameter) after 3 days without positive response to conservative therapy, was decided to make cystoscopy with installation of ureteral stand. In 11 patients from the same group, the ureteral stones were between 6 and 8 mm in diameter. Appearance of UVJ after 2 or 3 days of conservative therapy in 7 patients was considered as a sign of reduction of obstruction so conservative therapy was prolonged, which resulted with spontaneously elimination of the stones. In 4 patients signs of renal block persisted, so they required ureteroscopy with lit extraction. Depending on stones localization, II group patients were divided into 2 subgroups: 2A - 22 patients with stones in calyx, pieloureteral segment and medium third of ureter; 2B - 10 patients with stones in intramural ureteral segment. Positive dynamic was observed in 18 patients from 2A group (daily variations in increasing and growth of UVJ frequency). Despite treatment, in 4 patients UVJ frequency didn't change, so they required stimulation by infusional therapy, so on 3 or 6 day all patients spontaneously eliminated the stones. 7 patients from group 2B, on 2 or 4 - day spontaneously eliminated the stones and UVJ normalized. 3 patients for 5 days showed no positive dynamic, and meatotomy with lit extraction was required. During the study contradictory results between DU and radioisotope renography were not identified. We determinate that surgical treatment required 46.2% (6) of patients with total obstruction and only 15,6% (5) of patients with partial obstruction. In absence of radioisotope renography and other indications for hospitalization, DU evaluation of UVJ may be a selection criterion for ambulatory treatment. Daily DU examination of UVJ allows dynamic evaluation of urteral obstruction. DU examination of UVJ allows differentiation between partial and total urteral obstruction and helps us to select the treatment. DU examination of UVJ is an informative examination method that allows us to determine the prognosis of treatment, to prevent and decrease the number of complications, offers the possibility to decrease the number of radiological and radioisotope investigations.