

COLOR DOPPLER SONOGRAPHIC EVALUATION OF MEN WITH PEYRONIE'S DISEASE

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SUMMARY : Color Doppler sonographic evaluations of penile vascularity of 50 impotent patients, 24 of them were known to have the Peyronie's disease, were done. Eight (33.2%) of the patients with Peyronie's disease had abnormal blood flow parameters consistent with the arterial insufficiency. One patient (3.8%) had normal results but prolonged erection. The remaining 15 (62.5%) had venous leakage. Whereas, 14 (53%) of the 26 impotent patients without Peyronie's disease had arterial pathology, 7 (26.9%) with venous insufficiency and 5 (19.6%) with psychogenic or neurogenic impotence. Our results indicate that veno-occlusive dysfunction is the principal cause of impotence.

Key Words : Peyronie's disease, ultrasonographic diagnosis.

INTRODUCTION

Peyronie's disease is characterized by formation of palpable plaques in the corpora cavernosa, generally seen in the fourth to fifth decade (3). There is no tendency toward malignancy (3). Clinical manifestations include penile curvature, pain associated with erection and induration at the site of the fibrotic plaques.

Most of these patients are known to be potent. The reported prevalence varies from 4% to 48% (3). Although attempts have been made to clarify the etiology of impotence in this group of patients, the results are still controversial. In order to assess the etiology of erectile dysfunction in Peyronie's disease; color Doppler penile vascular evaluations of impotent men with and of normal controls without Peyronie's disease were done.

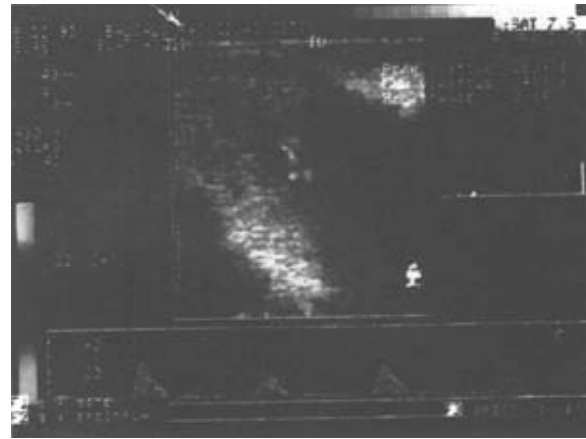
MATERIALS AND METHODS

Fifty impotent patients underwent color Doppler penile vascular evaluation. Peyronie's disease was clinically diagnosed in 24 of them. GE Sonochrome Color Doppler Ultrasound device was used with a 7.5 MHz probe. The color imaging examination was performed with the patient supine and penis in the anatomic position. The sonographic probe was placed on the ventral surface at the base of the penis. The initial scan was obtained with the penis in the flaccid state; high resolution real time imaging was used to show anatomic detail of the corpora cavernosa. Color Doppler imaging was then performed to display blood flow through cavernosal arteries. Maximum values of velocity of each cavernosal artery were measured before and after the intra-cavernosal injection of 60 mg papaverine.

Maximum velocity values >40 cm/sec was accepted as a normal arterial response. An erectile angle of <90 with Vmax values of >40 cm/sec was accepted as an indirect finding of venous incompetence (Figure 1a and b). Values between 30 and 40 cm/sec correlated with the erectile angle. An erectile angle of >90 was accepted as normal. Vmax values between 25 and 30 cm/sec indicated arterial insufficiency.

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Figure 1: Color Doppler US. 1a. Longitudinal sonogram obtained at the base of penis, shows V max 25 cm/sec which is consistent with arterial insufficiency. 1b High end diastolic velocity indicating venous incompetence and fibrous plaques in the vicinity of the cavernous artery.



Dynamic infusion cavernosometry and cavernosonography, was performed on 4 impotent and 7 Peyronie's disease patients with impotence as a part of preoperative assessment of erectile dysfunction. Because of the invasiveness of the procedure, it was not routinely performed.

Dynamic infusion cavernosometry and cavernosonography were performed 15 minutes after the injection of 60 mg intra-cavernosal papaverine by placement of 21 gauge needle into the cavernosal body and infusing saline by an automatic perfusion pump. The pump was adjusted to perfuse 1 cc/sec saline. When full erection was established at this speed (in 3 minutes with 180 cc saline), it was concluded that the patients had veno-occlusive dysfunction (Figure 2). In this group of patients, the same procedure was repeated with contrast added to the saline (1/5) for radiologic demonstrations of the leakage. Angiography was done on one patient with Vmax <25 cm/sec (Figure 3). It was performed by introducing an 4F Simmons catheter through the femoral artery.

RESULTS

Of the 50 impotent patients whose color Doppler penile vascular evaluations were done, 24 of them had concomitant Peyronie's disease. The mean age of the patients with Peyronie's disease was 55 and that of the control impotent patients, 51. There were no significant risk factors for impotence other than Peyronie's disease such as hypertension, smoking, diabetes, trauma and atherosclerotic heart disease.

Color Doppler Sonography was performed on all the patients after the patients were classified as having arterial insufficiency and venous incompetence according to the criteria explained previously. Eight patients (33.3%) of the 24 impotent patients with Peyronie's disease had abnormal blood flow parameters consistent with arterial insufficiency. One patient (3.8%) had normal findings and prolonged erection (psychogenic or neurogenic impotence). The remaining 15 patients (62.5%) had normal arterial flow but insufficient tumescence indicating veno-occlusive dysfunction. Whereas 14 (53%) patients of the 26 in the impotent group without Peyronie's disease had arterial pathology; 7 (26.9%), venous insufficiency and 5 (19.2%), neurogenic or psychogenic impotence. In both groups the existence of veno-occlusive dysfunction was confirmed by dynamic cavernosometry.

DISCUSSION

The studies that we have done on Peyronie's disease by Color Doppler Sonography and dynamic cavernosometry suggest that veno-occlusive dysfunction played an important role in the impotence seen in these patients. In our study, we found the ratio between venous incompetence and arterial insufficiency to be 62.5% which is consistent with other reports using different modalities.

Figure 2: Visualization of the deep dorsal vein on cavernosography.



Color Doppler Ultrasonography is not a direct way of testing venous leakage (1,2,4,6,7). Since we know the demonstration of high blood flow in the deep dorsal vein is not a reliable indicator of venous leakage, it is possible that some of our patients with arterial insufficiency might have had concomitant veno-occlusive dysfunction.

Between these two groups there is no significant difference between risk factors for impotence. In the general population the tendency toward impotence among patients with Peyronie's disease is a reality. Our study and other previous similar investigations show that veno-occlusive dysfunction is the major factor

responsible from impotence in Peyronie's disease. Therefore, there is a causative relationship between Peyronie's disease and venous dysfunction. The pathogenesis of this correlation is still unknown. Fibrosis of the tunica albuginea may disrupt the normal veno-occlusive mechanism. Histopathologic studies should be the next step in clarification of the pathogenesis.

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Figure 3: Selective arteriography shows multiple stenotic segments of proximal part of left pudental artery.



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