Color Doppler Flow Imaging in Ultrasound

Color Doppler flow imaging (CDFI) is a technique that utilizes conventional grayscale real-time ultrasound imaging to display an image of blood flowing within the scanned tissue. CDFI provides information about the presence or absence of blood flow, as well as the direction, velocity, and pattern of vascular-ity. With the use of duplex Doppler imaging, flow velocity and waveforms can also be assessed. This often provides unique diagnostic information.

**Cardiovascular**  CDFI provides a detailed anatomic display of important vessels, including carotid, vertebral, jugular, and extremity arteries and veins, permitting more rapid and accurate duplex scanning for quantitative flow evaluation and detection of extremity venous thrombosis.

**Abdomen**  CDFI is useful in evaluating hepatic circulation for portal hypertension, portosystemic shunts, and tumors, as well as in differentiating bile ducts from vessels, which can be difficult with grayscale imaging only. The mesenteric, splenic, and renal vessels can be evaluated for stenosis and obstruction, and flow within the organs can be studied. Hepatic and renal transplants can also be evaluated. CDFI is important in the evaluation of the abdominal aorta. This technique also improves detection of focal inflammatory processes, such as appendicitis and abscess. CDFI is invaluable for detection of testicular torsion, testicular tumors, epididymitis, and varicocele.

**Gyn**  CDFI is useful in the evaluation of ovarian lesions (cystic versus solid) and uterine lesions, including fibroids, polyps, carcinoma, and persistent trophoblastic neoplasia. This technique can also help to diagnose ectopic pregnancy by the associated flow characteristics of the gestational sac.

**Obstetrics**  CDFI is helpful in detailing anomalies of the fetal heart and great vessels. The umbilical cord can be studied for abnormal flow characteristics in fetal growth retardation, for position relative to the fetus and placenta, and to screen for a two-vessel cord, which can be associated with other fetal anomalies.

Developments in ultrasound equipment consistently improve the image quality and sensitivity of the CDFI technique and lead to new applications for this exciting tool.

Valley Radiologists are fortunate to work with excellent new ultrasound equipment. Utilizing the latest CDFI technology enhances the diagnostic capabilities of ultrasound imaging.

Further reading:
Foley WD. Color Doppler Flow Imaging, Andover Medical Publishing, Inc.