



SNS COLLEGE OF ALLIED HEALTH SCIENCES

SNS Kalvi Nagar, Coimbatore - 35

Affiliated to Dr MGR Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY- II YEAR

UNIT I :DOPPLER ECHO



DOPPLER ULTRASOUND



Doppler effect



- It refers to change in frequency that results from a moving sample or ultrasound source.
- Movement of object in the us beam changes the frequency of the reflected echo and the change in frequency is called doppler shift



- If the reflector is moving towards the transmitter, the reflected frequency will be higher than the transmitted frequency.
- If the reflector is moving away from the transmitter, the reflected frequency will be lower than the transmitted frequency



- Doppler us is used to investigate variation of blood flow in arteries and veins.
- Velocity and waveform can be used to evaluate stenosis, resistance and vessel patency.



Continuous wave doppler



- It is a simple least and expensive device for measuring blood velocity.
- Two transducers one with transmitting ultrasound continuously and other detecting ultrasound echoes. The system extracts doppler shift information from echoes returning from moving objects



- CW doppler measures high velocities accurately.
- There is no depth resolution and provide little spatial information.
- Good for measuring fast flow and deep lying vessels.



Pulsed wave doppler



- It provides both depth information and velocity simultaneously
- Here ultrasound is transmitted as pulses into body with good depth resolution
- Disadvantage is that it cannot measure high blood velocities in deep vessels and high velocities is wrongly displayed as low velocities.



Duplex doppler system



- It is combination of dynamic b scan imaging and pulsed doppler.
- In this system real time image of anatomy of interest is obtained first & image is frozen in the viewing screen
- a blood vessel is located by b mode us imaging and then the blood flow is measured by doppler ultrasound.



Color doppler



- The distribution and direction of flowing blood are shown as two dimension image in the velocities are distinguished as different colours.
- It also allows visualization of blood vessels and their flow characteristics plus images of tissues around the surrounding vessel
- Colours blue(veins)and red(arteries) are assigned to detect motion



THANK YOU