PRENATAL DIAGNOSIS AND MANAGEMENT OF CONGENITAL DIAPHRAGMATIC HERNIA (CDH)

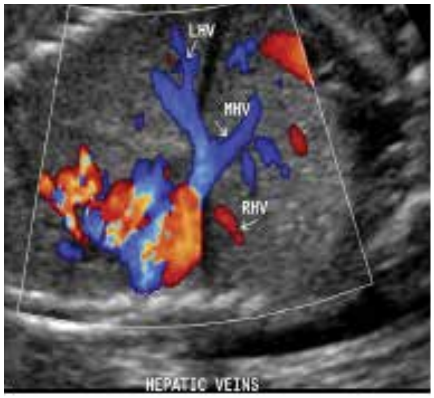
Protocol for Lung Head Ratio (LHR)

- An axial view of the level of the four-chamber heart should be obtained, taking care to avoid shadows produced by the ribs on the lung to be measured.
- Place the calipers according to the AP method — anteroposterior (AP) diameter of the right lung and the transverse (TRV) diameter of the right lung.
- When the LHR measurement is completed, divide by the expected LHR for gestational age, so the observed/expected (O/E) LHR is obtained.
- Calculate the volume of the normal lungs by multiplying the length, width and AP diameters by 0.523 (ellipsoid volume formula).
- Evaluate liver position with use of high-frequency transducers and color Doppler to illustrate the course of the hepatic vein (HV).

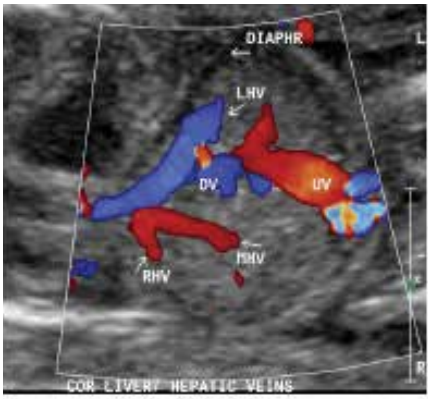
LHR =

AP x TRV (mm)

Head circumference (mm)



LCDH, left lobe of liver up, LHV up



LCDH, liver down, all HV down

Color Doppler to demonstrate liver position

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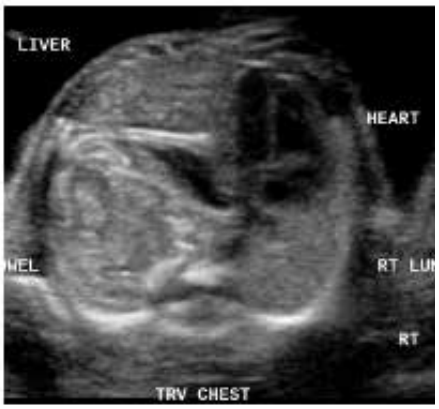
continued >

Lt CDH, liver down, using high-resolution gray-scale to demonstrate liver position



Lt CDH, liver up, using high-resolution gray-scale to demonstrate liver position

The incidence of need for ECMO and survival for the variables liver position and LHR

Variable	ECMO (%)*†	Survival (%)*‡
Liver up (49/89; 55%)	80	45
Liver down (40/89; 45%)	25	93
Lung-to-head circumference ratio <1 (20/89)	75	35
Lung-to-head circumference ratio >1 (69/89)	49	75

* P < .05, comparison of liver up vs. liver down and lung-to-head circumference ratio <1 vs. >1.
† Need for ECMO compared by Fisher's exact test.
‡ Kaplan-Meier curve.

Liver position and lung-to-head ratio for prediction of extracorporeal membrane oxygenation and survival in isolated left cogenital diaphragmatic hernia. Hedrick HL, et al. *AJOG* 2007;197(4):422.e1-4.

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