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).

\[
\text{LHR} = \frac{\text{AP} \times \text{TRV (mm)}}{\text{Head circumference (mm)}}
\]

Color Doppler to demonstrate liver position

LCDH, left lobe of liver up, LHV up

LCDH, liver down, all HV down

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

<table>
<thead>
<tr>
<th>Variable</th>
<th>ECMO (%)†</th>
<th>Survival (%)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liver up (49/89; 55%)</td>
<td>80</td>
<td>45</td>
</tr>
<tr>
<td>Liver down (40/89; 45%)</td>
<td>25</td>
<td>93</td>
</tr>
<tr>
<td>Lung-to-head circumference ratio &lt;1 (20/89)</td>
<td>75</td>
<td>35</td>
</tr>
<tr>
<td>Lung-to-head circumference ratio &gt;1 (69/89)</td>
<td>49</td>
<td>75</td>
</tr>
</tbody>
</table>

* 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.