UNM HOSPITALS

Hepatobiliary Study for Sphincter of Oddi Dysfunction

Last updated 06.2018

Indication:	To identify sphincter of Oddi dysfunction in patients who continue to have RUQ pain **following cholecystectomy.** To be performed at UNMH and SRMC

Radiopharmaceutical: Tc-99m Choletec (mebrofenin) or Hepatolite (disofenin, DISIDA)

Dose (Adult/Pediatric): Refer to Nuclear Medicine Dose Chart

Route of Administration: Intravenous for radiopharmaceutical

Pre-treat patient with CCK (0.02 ug /kg). Infuse CCK over 3 mins

Patient Preparation:

- NPO for 3 hours
- Morphine or other opioid derivates (e.g., hydromorphone (Dilaudid), Fentanyl) should be held for 4 hours.

Equipment Setup:

Gamma Camera:

- LFOV camera for adult studies
- LFOV camera with ZOOM for studies in small children as appropriate

Collimator:

- SPECT-CT/E-CAM/EVO: High resolution

Computer setup:

Anterior:

- Dynamic acquisition
- 128 x 128 matrix
- Zoom 1.0 (greater for children)
- 1 min/image, 60 images

Patient Positioning:

Anterior:

- Liver at top left of screen so that bile ducts and bowel can be visualized.

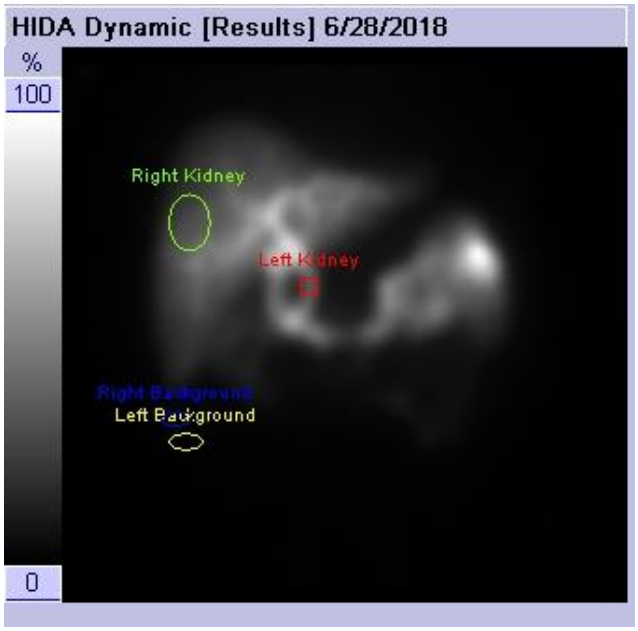
Procedure: 15 mins following CCK injection, inject radiotracer and begin anterior dynamic

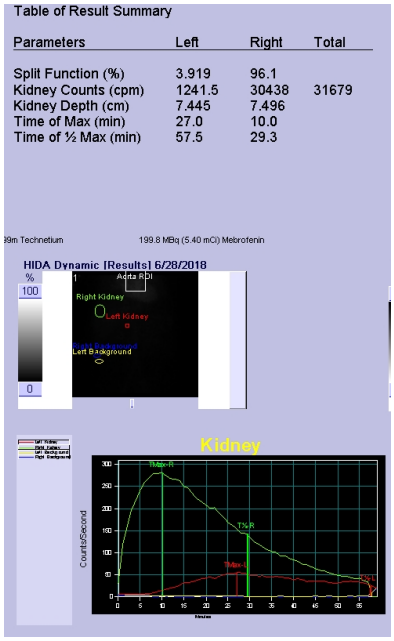
images for 60 minutes as above.

Processing:

Anterior 1-hour dynamic images:

- Merge each 5 images together to display 5-min/frame
- Using the renogram software, draw regions of interest over the liver and the common bile duct, to generate time activity curves over each area.
- Be sure to draw the CBD ROI over the lowest portion of the duct which is not superimposed by bowel activity. **Make sure no bowel activity is included in CBD ROI.**
- Save screen caps of time activity curves along with Peak time, and Peak to half time values to PACS.





Reference Tables for Radiologists

TABLE 1
Criteria for Scoring Scintigrams

Criteria	Score
1. Peak Time	
a. Less than 10 min	0
b. 10 or more min	1
2. Time of Biliary Visualization	
a. Less than 15 min	0
b. 15 or more min	1
3. Prominence of Biliary Tree	
a. Not prominent	0
b. Prominent major intrahepatic ducts	1
c. Prominent small intrahepatic ducts	2
4. Bowel Visualization	
a. Less than 15 min	0
b. 15–30 min	1
c. More than 30 min	2
5. CBD Emptying	
a. By more than 50%	0
b. Less than 50%	1
c. No change	2
d. Shows increasing activity	3
6. CBD-to-Liver Ratio	
a. $CBD_{60} \leq Liver_{60}$	0
b. CBD_{60} higher than $Liver_{60}$ but lower than $Liver_{15}$	1
c. CBD_{60} higher than $Liver_{60}$ and equal to $Liver_{15}$	2
d. CBD_{60} higher than both $Liver_{60}$ and $Liver^{15}$	3

Normal score: 1-4
Abnormal score: 5-12

TABLE 2
Scintigraphic Findings (Values in Controls and Abnormals)

	Controls			SOD group	
Parameter	Mean	Range	Units	Mean	Range
Liver peak	6.1	5–10	min	11.7	5–18
Biliary visualization	8.7	5–12	min	16.1	5–30
Biliary prominence*	0.4	0–3	score	2.1	1–3
Bowel visualization	11.2	5–20	min	33.3	10–60
CBD emptying	77.0	50–90	%	0.5	−100–50
CBD-to-liver ratio*	0.8	0–2	score	2.8	2–3
Scintigraphic score*	1.5	0–5	score	7.8	6–12

* Values refer to score assigned as per Table 1.

TABLE 3
Sensitivity and Specificity of Individual Scintigraphic Criteria

Parameter	Sensitivity	Specificity
Liver peak	0.83	0.79
Biliary visualization	0.50	1.00
Biliary prominence	1.00	0.79
Bowel visualization	0.92	0.71
CBD emptying	1.00	0.93
CBD-to-Liver ratio	1.00	0.86
Final scintigraphic score	1.00	1.00

References:

Sostre S, Kalloo AN, Spiegler EJ, Camargo EE, Wagner HN Jr. A noninvasive test of sphincter of Oddi dysfunction in postcholecystectomy patients: the scintigraphic score. J Nucl Med. 1992 Jun;33(6):1216-22.