AASLD November 13-16, 2020
The Liver Meeting®

IS PHYSIOLOGIC STAGING OF CLD POSSIBLE WITH ULTRASOUND?

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METHODS

1. US and SWV: All patients had a fasting US (GE LOGIQ E9) with SWE per manufactures instructions: shear wave velocity (SWV) and estimated METAVIR fibrosis score (eMFS: 0-4) were recorded. Surface nodularity, spleen length (SL) (cm) and ascites were recorded.
2. Clinical data was abstracted from the records.
3. **Hepatiq** automated quantitative liver spleen scan (QLSS) (Hepatiq_inc), meal 1-1 ½ hr before scan, can of ensure at the radiology, injection 99Tc sulfur colloid, SPECT reconstruction and image processing by Hepatiq for perfused hepatic mass (PHM), functional spleen volume (fSV) and functional Liver volume (fLV).

PATIENTS:

1. 950 sequential patients with US for HCC screening and/or initial evaluation of CLD.
2. Liver Disease: see tables
4. SWE was successful in 96.8% and Hepatiq was Successful in all patients.
5. Six Ultrasound Categories A-S thru C-N) were established based on surface nodularity (N = nodular and S = smooth) and estimated metavir fibrosis score (eMFS) where
A = eMFS of 0-1
B = eMFS of 2-3
C = eMFS of 4
6. Cirrhosis Dx: Diagnosis of cirrhosis was based on combinations of parameters including liver surface nodularity, abnormal blood tests (platelet count, INR, Bilirubin), CT/MRI showing collaterals, Varices by EGD and liver biopsy.
7. CLD: cryptogenic cirrhosis, HBV, HCV, PBC, PSC, ACAH and miscellaneous. Non-cirrhotic patients (NC) included pre-cirrhotic CLD, non-cirrhotic portal hypertension and acute liver disease with jaundice.

Clinical Results: QLSS in US categories

	number	PHM mean (+/-SD)	PHM <95 (%)	fSV (cc/lb IBW) mean (+/-SD)	fSV > 2.5 (%)
A-S	659	104 (5)	1.0 %	1.3 (1.0)	7.9 %
A-N	37	93 (11)	37.8 %	3.3 (3.0)	43.2 %
B-S	120	101 (8)	8.8 %	1.9 (1.1)	18.3 %
B-N	83	88 (12)	62.5 %	4.3 (3.4)	41.2 %
C-S	23	101 (9)	8.7 %	2.1 (1.3)	17.4 %
C-N	36	86 (13)	66.7 %	3.7 (2.7)	68.6 %

Liver Tests in US categories

	number	%	age (mean+/-SD)	Platelet X1000 (cells/mm3)	Bili (mg%) (mean+/-SD)	INR (mean+/-SD)
A-S	659	68.8 %	58 (14)	228(73)	1.0 (.1)	1.0(.1)
A-N	37	3.9 %	71 (12)	167(87)	1.0(.4)	1.0(.4)
B-S	120	12.5 %	61 (14)	201(78)	.9 (.9)	1.0(.1)
B-N	83	8.7 %	67 (14)	129(76)	1.2 (.9)	1.1(.2)
C-S	23	2.4 %	59 (14)	199(80)	.9(1.1)	.9(.1)
C-N	36	3.8 %	64 (15)	140(89)	2.0 (2.2)	1.2(.3)
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CONCLUSION

1. eMFS 0,1 with a smooth surface (A-S) predicted early physiologic stage
2. Increasing eMFS 2-4 (BS and CS) with a smooth surface did not predict more advanced physiologic stage
3. Surface nodularity predicted poor function and portal hypertension with increasing percent as eMFS increased, but was not precise in the individual patient
4. Physiologic staging of advanced CLD is inaccurate with US