

Small Liver Volumes: Cause and Significance

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HYPOTHESIS

HEPATIQ measured small functional liver volumes and PHM by automated QLSS image analysis will correlate with advanced CLD and severe acute injury..

AIMS

Determine the relationship of PHM, SV/IBW and LV/IBW by HEPATIQ in patients with very small livers to determine the cause and significance.

METHODS

QLSS Protocol: Standard meal, IV Tc 99m Sulfur Colloid followed by SPECT reconstruction. Volume and PHM calculations processed by HEPATIQ automatically.

PATIENTS

1. QLSS database of 3015 scans
2. fLV: normal 7-12 cc/lb IBW Very small fLV: (VSfLV) ≤ 5 cc/lb IBW
3. fLV < 5 cc/lb IBW 43 scans in 31 patients
4. Chart review for cause of liver disease, associated conditions and clinical outcome: HBV 8, HCV 6, Autoimmune 3, CC 3, Unknown 5, Misc: Nash 1, ALD 1, PBC 1, Normal 2

RESULTS

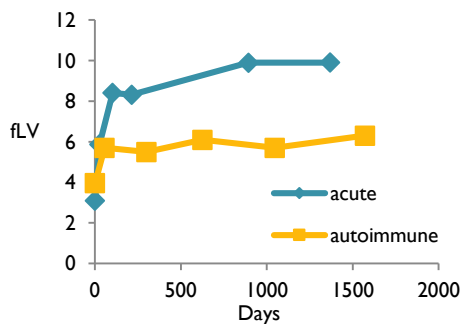
	#	cirr	HCC	Platelet	INR	ALT	Bili	AFP	died
Acute	4	0	0	201(74)	1.1(.1)	254(349)	3.1(1.9)	13(14)	0
CLD HCC	9	7	9	113(69)	1.2(.2)	30(8)	2.5(2.7)	135(245)	6
CLD	7	7	0	72(33)	1.3(.2)	13(6)	1.4(.9)	3.1(.7)	2
NC CLD flare	3	0	0	107(65)	1.2(.2)	308(413)	9.7(9.1)	16(11)	0
NC CLD	3	0	0	157(59)	1.0(.1)	41(36)	1.0(.4)	3.2(.5)	0
Normal	2	0	0	184(54)	1.0(0)	68(67)	.8(.1)	1.8(.7)	0

	#	PHM	fSV	fLV
Acute	4	77(15)	1.8(1.6)	3.7(.6)
CLD HCC	9	76(17)	2.8(2)	4.4(.5)
CLD	7	75(15)	4.0(3.0)	4.7(.4)
NC CLD flare	3	73(18)	3.3(1.9)	4.2(.4)
NC CLD	3	100(1.5)	1.0(.7)	4.6(.7)
Normal	2	102(3)	.6(0)	5(0)

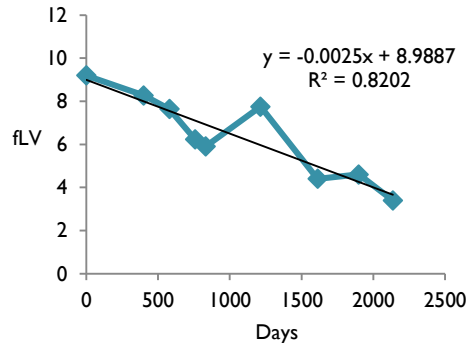
CONCLUSIONS

1. Small fLV (< 7 cc/lb IBW) is associated with more advanced liver disease and acute liver injury
2. Very small liver volumes (< 5 cc/lb IBW) are associated with advanced CLD with/without HCC with poor prognosis
3. Very small liver volumes with jaundice are associated with severe acute liver injury; recovery shows rapid recovery of volume probably associated with regeneration
4. Occasionally, apparently normal individuals can have a very small liver volume

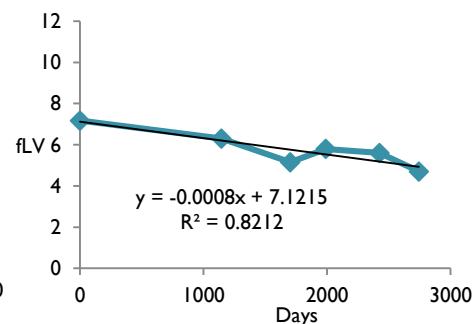
Acute Severe Liver Disease



CLD HCC Rx



HCV Cirrhosis s/p SVR



Distribution of fLV

