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Research Article

**MEDICAL ASSESSMENT OF HEPATOCELLULAR
CARCINOMA AFTER LIVERWORT ENUCLEATION IN
ADOLESCENT AGAINST AGEING VICTIMS**¹Dr Hamna Tariq, ²Roman Bibi, ¹Dr Sidra Mukhtar¹AIMTH Sialkot, ²Hayatabad Medical Complex Peshawar

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Abstract:

Objectives: The main objective of discussed is to inspect the medical preoperative laboratory statistics, intraoperative findings, and medical outcome of HCC in older v/s adolescent victims those who underwent invasive enucleation.

Methods: Demographic and operative statistics, pathological findings, and post-invasive consequences were collected. Prognostic factors were analyzed by univariate and multivariate assessment. A total of 51 “ageing” (≥65 yrs old) and 102 “adolescent” (≤65 yrs old) who underwent liverwort enucleation between December 2012 to January 2019 were identified and included in this research.

Results: More fundamental Hepatitis B virus contamination and cirrhosis found in adolescent (84.6% - 94.4%). In both of sets, adolescent males (91.19%) and older female (23.6%) with a combined P-value <0.004, have a higher proportion of HCC. There was no significant arithmetical difference in the Child-Pugh class in both sets. More fundamental diabetes mellitus and Hepatitis C were observed in ageing HCC. Post-operative pneumonia and pleural effusion common in adolescent group (9.8%, P<0.516 and 34.6%, P<0.32 respectively), while wound contaminations were most commonly seen in the ageing (19.8%, P<0.55). The overall estimated mortality and hospitalization were not significantly different in both sets. The intraoperative parameters adolescent victims received right-sided hepatectomy, right hepatectomy (65.8%), and right trisegmentomy (10.8%) while the older victims mostly received left-sided hepatectomy, left hepatectomy (37.5%).

Conclusion: Still, it proves that a liverwort enucleation is a safe option in Hepatocarcinoma carcinoma. Two sets of operative consequences indicated that the right lobe of liver HCC more in the adolescent and left lobe more in older victims and post-operative wound contamination in ageing and pleural effusion.

Keywords: Hepatocarcinoma carcinoma, Wound contamination, Hepatectomy.

Corresponding author:**Dr. Hamna Tariq**

AIMTH Sialkot

QR code



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INTRODUCTION

The frequency of HCC is highest in Asia and Africa, where the endemic high prevalence of hepatitis B and hepatitis C strongly predisposes to the development of chronic liver disease and subsequent development of HCC, the most deadly cancer in China and the critical cause of HCC is hepatitis B virus. The peak onset of age is 40 to 50 yrs HCC in China. [1, 2]. Hepatocarcinoma carcinoma (HCC) is a primary malignancy of the liver and occurs predominantly in victims with fundamental chronic liver diseases like Hepatitis B virus contaminations and cirrhosis. HCC is now the third most common cause of death worldwide, and the incidence is gradually increasing.

A few yrs back liver surgeons hesitated to perform liverwort enucleations because of older victims with large tumors or tumors near to the hilum and vascular invasions, if ruptures there are high risk of massive bleedings or even cause mortality and more post-invasive complications in older victims as compared to adolescent victims, Nowadays surgeons perform liverwort enucleations frequently and unavoidable. Life expectancy has increased because of advancement in invasive techniques. The progression of a tumor with local expansion distant metastases, some previous statistics reveals that poor prognosis in the ageing as compared to adolescent victims and few researches show no noticeable difference in consequences of both adolescent and older age sets of victims. [3, 4].

The primary purpose of this research is to analyze the medical preoperative laboratory statistics, intraoperative findings, and invasive outcome of HCC in older v/s adolescent victims who underwent invasive enucleation. A few reports are comparing the consequences of adolescent and ageing HCC

victims after liverwort enucleation in China, and they determined the significance of liverwort enucleation in the two sets.

VICTIMS AND METHODS:

We divided 153 victims into two sets ageing >65 yrs of age (n=51) and adolescent <65 yrs (n=102). From December 2012 to January 2019, the number of 153 victims diagnosed with HCC underwent R0 Liverwort enucleation at the Qinghai University Affiliated Hospital in a single hepatobiliary surgery department that was included in this research. The etiology represents the chronic course of liver disease like hepatitis B surface antigen (HBsAg) and anti-hepatitis C (Anti-HCV antibody), which was found in liverwort markers researches and cirrhosis. HCC Diagnosis based on pathology results and radiology scanning like computed tomography and magnetic resonance imaging results or specific tumor markers an alpha-fetoprotein concentration >200 ng/ml, Carbohydrate antigen (CA)19-9 and Carcinoembryonic antigen (CEA) increase levels, ultrasonographic and endoscopic signs of portal hypertension. Child-Pugh class A and B and the Model for End-Stage Liver Disease (MELD) scoring system were used for evaluation of performance status and functional status of the liver R0 Enucleation indicates the complete removal of all tumors. We consider age >65 ageing because most developed countries around the world accepted the chronological age 65 yrs as 'ageing' or older person as WHO health statistic system described. Before surgery, every patient was subjected to physical examination; laboratory examination like complete blood count, liver functions includes serum transaminases, alkaline phosphate, Prothrombin time, and albumin. [5, 6].

Table 1 medical characteristics

Variable		Older Age (n = 51)	Adolescent Age (n =102)	P value
Gender	Female	12(23.5%)	9(8.86%)	.004
	Male	39(76.6%)	93(91.15%)	
Age		69.29 ± 4.8	50.29 ± 8.8	.519
Splenomegaly		13(25.4%)	56(54.8%)	.211
Etiology				.006
Cirrhosis		42(82.5%)	96(94.5%)	.695
HBV		34(66.4%)	86(84.5%)	
HCV		7(13.5%)	6(5.8%)	
NBNC		10(20.5%)	10(9.7)	
Diabetes		14(27.6%)	20.6(20.5%)	.411
Hypertension		21(41.2%)	27(26.5%)	.378
Jaundice		9(17.5%)	12(11.7%)	.764

Statistics are expressed as numbers (percentage) or mean ± SD. HBV = hepatitis B virus; HCV = hepatitis C virus; NBNC = Non-B, Non-C.

Variable	Table 2 Pre-operative Laboratory Results		
	Older Age (n = 51)	Adolescent Age (n = 102)	P
HCT	38.10 15.97	84.30 411.86	0.43
APTT	33.33	33.44 6.20	0.13
PA	178.59 68.02	179.99 57.71	0.26
Direct Bilirubin	4.79 2.54	5.26 8.47	0.36
Total Bilirubin	13.11 4.96	14.88 11.94	0.45
BUN	5.94 2.56	5.55 1.58	0.71
CRE	72.24 49.01	69.52 13.61	0.65
WBC	5.52 2.64	4.94 1.75	0.32
RBC	4.85 4.95	4.45 0.53	0.94
Platelet	140.96 52.53	134.60 67.86	0.43
Hemoglobin	127.07 18.11	137.45 18.36	0.18
INR	1.07 0.11	1.10 0.15	0.50
GGT	91.12 91.85	95.29 115.70	0.00
UA	281.08 76.70	302.15 89.06	0.04
Sodium	138.79 11.19	139.28 5.50	0.16
ALB	39.45 4.29	40.06 5.55	0.22
ALP	102.02 53.44	100.64 48.31	0.19
ALT	39.18 39.44	55.73 87.37	0.73
AST	49.16 40.64	53.33 75.22	0.85
Pugh-Child			
AFP	347.13 759.10	4089.83 18937.45	0.73
CA19-9	244.60 1400.27	48.71 176.74	0.92
CEA	2.66 2.22	2.70 1.83	0.00
Class A	48(94.1%)	84(82.4%)	
Class B	3(5.9%)	18(17.6%)	

Statistics are expressed as numbers (percentage) or mean \pm SD. WBC = White Blood Cells ; RBC = Red Blood Cells ; PA = pre-albumin; BUN = Blood Urea Nitrogen ; INR = International normalized ratio ; HCT = Hematocrit ; APTT = Activated partial thromboplastic time ; ALT = Alanine Aminotransferase ; AST = Aspartate aminotransferase ; GGT = γ -glutamyltransferase ; UA ; CRE = Creatinine ; ALB = Albumin; ALP = Alkaline phosphate ; Uric acid; AFP ; α -fetoprotein; CA19-9 = carbohydrate antigen 19-9 ; CEA = Carcinoembryonic antigen.

All the procedures were safe; there was operative mortality. Trisegmentectomy refers to the removal of three segments of the liver. The gross intra-operative tumor examination includes tumor vascular involvement, tumor size, tumor numbers, and capsular formation was done Tumor size more than

5cm considered as primary tumor enucleation while less than 5 cm tumors as minor tumor enucleation. The resected tumor specimen sent for histological results, microscopic examination reveals tumor characteristics as solitary, uninodular, envelop formation tiny vascular invasions. The extent of tumor staging evaluate by the Barcelona Clinic Liver Cancer BCLC staging system was used [7]. The peri-operative standard techniques were used for hepatectomy. Anatomic enucleation defines removal of more than two or more segments of the liver, while non-anatomic enucleation referred to as removal one section with its free margins. The performed liverwort enucleations types included left, right, or extended medial plus a portion of right or left lobe lobectomy, The Sectionectomy refers to enucleation of two couinaud sub-segments or segmentectomy (enucleation of one couinaud sub-segment) [8].

Table 3 Intra-operative Findings & Pathological Feature

Variable	Older Age (n = 51)	Adolescent Age (n = 102)	P
Type of surgery			0.274
Limited Enucleation	30(58.8%)	60(60.8%)	0.381
Anatomic	30(58.8%)	63(61.8%)	
Non-anatomic			
Lobectomy			
Left lobectomy	19(37.3%)	27(26.5%)	
Extended lobectomy	8(15.9%)	8(7.8%)	
Right lobectomy	24(46.8%)	67(65.7%)	
Sectionectomy/Segmentectomy			0.105
Single Segmentectomy	22(43.1%)	40(39.2%)	
Multiple Segmentectomy	29(56.9%)	62(61.8%)	
Trisegmentectomy	2 (3.9%)	11(10.8%)	0.127
Tumor size			
Minor < 5cm	25(49.0%)	44(43.1%)	
Major > 5cm	26(51.0%)	58(56.9%)	
Number of tumors			0.896
Single tumor	40(78.4%)	87(85.3%)	
Multiple tumors	11(21.6%)	15(14.7%)	
Type of tumor			0.191
Solitary	25(49.1%)	16(15.6%)	
Nodular	26(51.2%)	86(84.6%)	
Vascular invasion	5(9.7%)	10(9.5%)	0.557
Portal vein invasion	5(9.7%)	10(9.4%)	0.557
Intra-liverwort metastasis	16(31.5%)	25(24.4%)	0.044
Thrombosis	4(7.7%)	7(6.8%)	0.553
BCLC Stage, n (%)			
A	11(21.54%)	28(27.46%)	
B	34(66.55%)	63(61.77%)	
C	2(3.92%)	9(8.85%)	
0	4(7.85%)	2(1.97%)	
Estimated Blood Loss (in ML)	123.32 368.64	285.24 354.79	0.836
Blood transfusion			
Plasma	44.12 108.97	10.29 54.65	0.385
RBC	23.53 89.18	35.29 106.84	0.676
Operative Mortality	0(0%)	0(0%)	
Statistics are expressed as numbers (percentage) or mean +- SD. BCLC = Barcelona Clinic Liver Cancer.			

Arithmetical Assessment:

All statistics described as percentages of victims, mean, and standard deviation. To perform statistics assessment, SPSS 22.0 for Windows (SPSS, Chicago, IL, USA) was used. T-test and Pearson Chi-square used for continuous variables. The continuous variables are expressed as median (range). Every assessment, P<0.05 consideration, show

arithmetical significance. Kaplan-Meier method used to calculate disease-free survival rate and log-rank test for comparison of sets. Cox regression model helped to get multivariate assessment.

RESULTS:

Table 4 Post-operative Consequences & Characteristics

Variable	Older Age (n = 51)	Adolescent Age (n = 102)	P
Ascites	0(0%)	10(9.8%)	0.000
Liver failure	0(0%)	2(1.9%)	0.000
Renal failure	0(0%)	1(0.9%)	0.000
Peak ALT	98.84 80.84	109.82 152.54	0.852
Peak AST	84.24 107.74	70.19 136.24	0.727
MELD Score	8.04 2.17	8.15 2.29	0.369
<8	28(54.95%)	45(44.14%)	
8–11	19(37.24%)	51(50%)	
>11	4(7.84%)	6(5.84%)	
3-Months Estimated Mortality	2.78% 1.74%	2.87% 2.35%	0.284
Recurrence	4(7.84%)	0(0%)	0.000
Post-Operative Hospital stay	9.82 4.45	9.05 2.75	0.861
Wound contamination	10(19.4%)	10(9.87%)	0.530
Pneumonia	2(3.9%)	10(9.7%)	0.514
Pleural effusion	8(15.5%)	25(24.7%)	0.312
Bile leakage	0(0%)	2(1.8%)	0.000
Statistics are expressed as numbers (percentage) or mean +- SD. MELD = Model for End-Stage Liver Disease.			

Pre-operative Results:

Positive Hepatitis C virus contamination 7(13.7%), diabetes 14(27.5%) and hypertension 21(41.2%), more commonly found in the elder age group as compared to the adolescent group. All victims divided into two sets older (n=51) and adolescent age group (n=102) in table 1. In both sets, males are most commonly HCC affected as compared to females with combined P-value (<0.004). More victims, mostly with Child-Pugh Classification class A 48(94.1%) in older and 84(82.4%) in adolescent victims, were found. While Hepatitis B virus contamination 86(84.3%), cirrhosis 96(94.1%), and Splenomegaly 56(54.9%) more commonly found in the ageing group. In both old age and young age sets, victims were operated with the same invasive approach, and there was no arithmetical significant difference found in surgery blood loss, during an operation blood transfusion. Alpha Protein P-value and other laboratory finding there was no arithmetical ly significant difference were located in P-values in both sets. The size of tumors, type of tumors, and the number of tumors, vascular, and portal vein involvement of tumors were not many significantly relevant. . Left lobectomy was mostly done in ageing

19(37.3%) as compared to adolescent age group while right lobectomy was mostly in adolescent age group 67(65.7%). There was no intra-operative mortality in both sets. For the tumor stage, Barcelona Clinic Liver Cancer (BCLC) B stage was observed in both sets.

Post-operative complications:

Post-operative pneumonia (9.8%, P<0.514) and pleural effusion 25(24.5% P<0.0321) commonly seen in the adolescent age group, while wound contaminations was most commonly seen in the ageing (19.6%, P<0.530). Bile leakage, ascites, liver, and renal failure are not arithmetical ly significant. The post invasive hospital stay duration was almost similar in both sets, which were shown in Table 4. Recurrence of HCC was seen only in 4 victims belongs to the elder age group. Long-term prognosis after liverwort enucleation for HCC of ageing participants is not different from adolescent participants The post-operative liver transaminases level under control levels. The Model for End-Stage Liver disease (MELD) scores and three months estimated mortality rate was almost the same in both sets. [9,10,11].

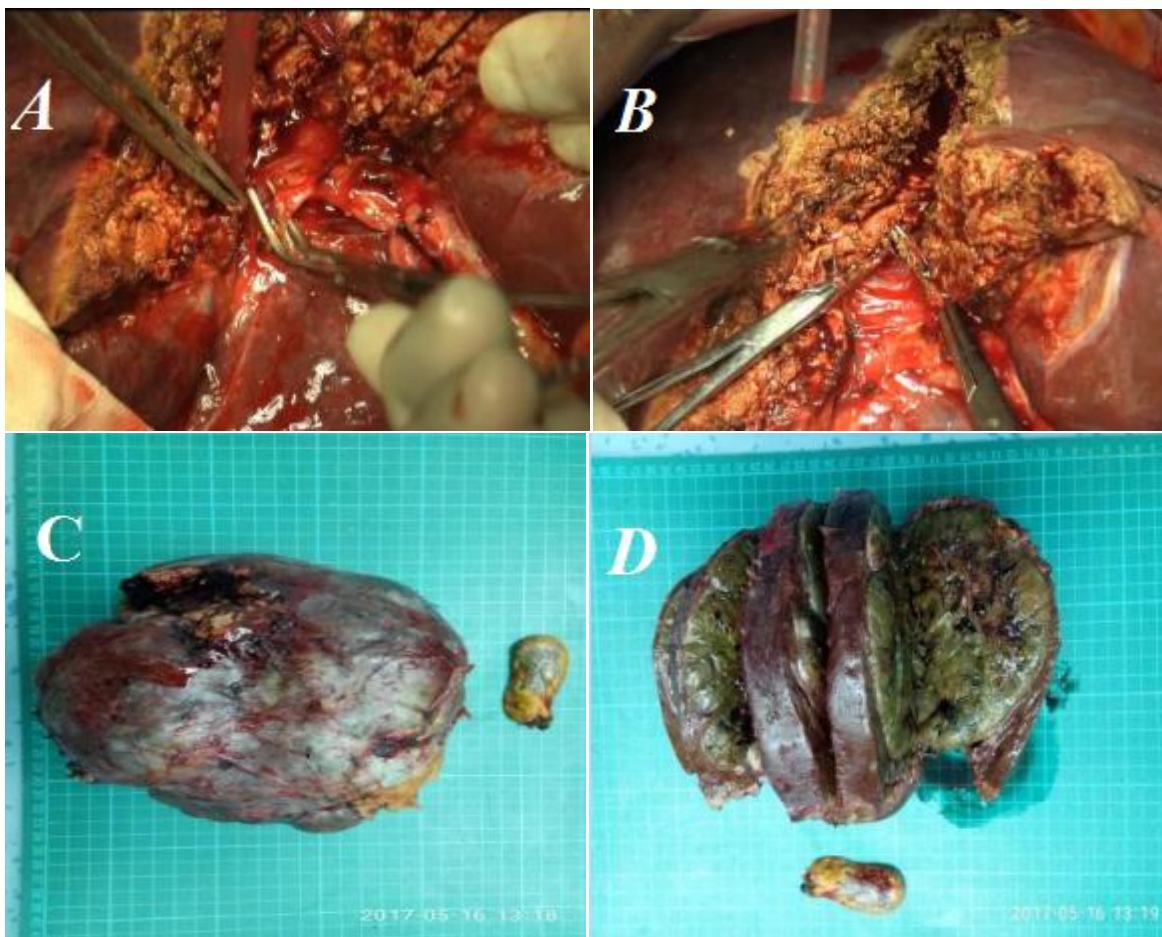


Figure A and B are showing the procedure of treatment & Figure; C and D showing the removal tumor of the liver.

DISCUSSION:

The improvement in preoperative screening with the advancement in invasive procedures, techniques and post invasive management decreases old age contraindications of liverwort enucleation in China. [12]. The newer invasive technologies, improvement in life quality, the average expectancy of life increase, although old age people have a higher risk of developing HCC, the incidence is also increasing in adolescent age significantly. There are different types of treatment pattern methods for HCC. Liverwort enucleation is the first-line treatment option for Hepatocarcinoma carcinoma in that where liverwort enucleation is possible [6,13,14,].

In our research, we compared two sets who went for liverwort enucleation. Which is represents as an elder age group >65 against young age <65 yrs of age. There are many controversies about the exact old age definition, which is considered different in Asia, Europe, and the USA. WHO (world health organization) defines the classification of ageing which is >65 yrs old referred to as old age so we

choose period >65 is old age and divide victims into two sets >65 is old age group victims and <65 is young age group victims [17]. There are only a few researches demonstrate differences in medical changes of old age HCC victims compared with adolescent age HCC victims [6,14,15,16,] previously, and there are just one or two researches that were conducted in China which shows medical changes between these old and young group [18].

Around all over the world, males have a higher incidence rate of HCC than females [13,15,16]. In our research findings, HCC most commonly found in males victims as compared to female victims in both sets. However, females in the old age group (23.6%) were at a higher rate than adolescent age females victims (8.83%), which is also similar in some previous researches [19].

However, the rate of hepatitis C virus contamination is higher in the mature age group (13.7%) as compared to the adolescent age group (5.9%). Our research findings show comorbidities such as

hypertension and diabetes (41.2%, 27.5%) commonly seen in older age group victims. The rate of hepatitis B virus contamination was much higher in the adolescent age group (84.3%) as compared to the older age group, which is (66.1%). Cirrhosis and Hepatitis B virus contamination still the most common cause of HCC in both age sets in China. Although Non-Hep B and Non-Hep C etiology also mostly seen in the old age group (20.2%) as compared to the adolescent age group (9.8%). Hepatitis C virus is widespread in adulthood, which causes the HCC many yrs after a prior contamination [20].

There was a very high rate of splenomegaly (54.9%) in adolescent age group victims, as shown in pre-operative findings. HBV infected HCC victims adolescent than HCC infected victims just because HCV takes decades to induce HCC.

CONCLUSIONS:

The results of this research suggest that both ages must receive the same pattern of treatment for HCC. Age itself is not a contraindication of surgery for Hepatocarcinoma carcinoma, but age group victims required conservative observations. There are very similar results consequences in both age sets.

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