



A Review of Institutional Experience of Hepatic Resection for Hepatoblastoma

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Aim of the Study

To analyze the pattern of clinical presentation and diagnostic investigations in Hepatoblastoma, and to discuss the results of Hepatic resection with neo-adjuvant and/or adjuvant chemotherapy

Method of Study

Retrospective analysis of all the hospital data of 10 children who underwent Hepatic resection for Hepatoblastoma during the period of May 2004 to May 2006 was studied, as a part of a long term study of all cases of Hepatic resection done during the period of 2004 – 2018 at a single institution, which has been divided into 3 phases : 2004-06, 2007-10 and 2011-18. The results during the period of 2004-2006 is being presented here as a pilot study.

Primary Hepatic resection for hepatoblastoma and surgeries done after neo-adjuvant chemotherapy are included in the analysis.

Diagnostic Investigations Used

1. Ultrasound scan of abdomen
2. Serum Alfa- fetoprotein
3. Chest X ray
4. CT Scan of abdomen
5. FNAC / Tru-cut biopsy of Liver

Patients with un-favorable features that preclude primary resection were selected for upfront chemotherapy. Results of pre operative chemotherapy were assessed. Patients were re-evaluated for resectability after completing chemotherapy. Intra operative findings, extent of surgery and intra operative course was studied. Post operative course and complications were noted. All patients received post operative chemotherapy. Results of post operative chemotherapy were assessed. Patients were followed up clinically and with serial AFP and USS Abdomen. Any evidence of recurrence was sought.

Results

Mean age at diagnosis was 2.9 years. Sex incidence was M:F = 6:4. No associated anomalies were detected in any of the cases. No significant post natal history/prematurity association was observed. Most commonly, children presented with mass abdomen.

Table 1: Clinical presentation of Hepatoblastoma

CLINICAL PRESENTATION	Total number of patients; n=10
Mass detected by parents / physician	7
Liver lesion detected on USS	3
Anorexia	8
Significant loss of weight	5
Abdominal pain	8
Fever	6

Table 2: Pre Operative Serum AFP (NG/ ML)

PRE OPERATIVE SERUM AFP (NG/ ML)	Total number of patients; n=10
5000 – 10,000	4
11,000 – 20,000	4
20,000	2

The lowest S.AFP was 5020 ng/ml and the highest S.AFP was 27,400 ng/ml.

Platelet Count

1. Value < 4 lakhs / mm³ : 8
2. Value > 4 lakhs / mm³ : 2

Hemoglobin

1. < 8 g/dl : 1
2. 8 - 10 g/dl : 4
3. > 10 g/dl : 5

Site of Lesion (USS, CECT)

The lesion involved the Right lobe in 9 patient and left lobe in 1patient.

Table 3 : Site of the lesion and PRETEXT staging

Segment(s) involved	Number of patients	PRETEXT STAGING
5,6	2	II
5,6,7	3	II
5,6,7,8	2	II
7,8	2	II
2,3,4a	1	II

Size of Lesion: (Maximum Diameter)

1. < 5 cm : 1
2. 5 - 7 cm : 6
3. 8- 9 cm : 3

Table 4: Findings on imaging in Hepatoblastoma

Findings on imaging	Number of patients
Hepatic Vein infiltration	4
Portal vein infiltration	0
Hilar lymph node metastasis	2
Para aortic lymph node metastasis	0
Diaphragm infiltration	2
CXR suspicion of metastasis	0

FNAC done in 6 patients and was diagnostic of Hepatoblastoma in 4 cases. Core needle biopsy was done in 6 patients and was diagnostic in 5 cases. The number of patients who underwent neo adjuvant chemotherapy were 6.

Pretext (Pre Treatment Extent of Disease) Staging

1. STAGE I : 0
2. STAGE II : 10
3. STAGE III : 0
4. STAGE IV : 0

Indication for Neoadjuvant Chemotherapy

1. Large size of tumor (> 5 cm)
2. Multiple segments involved
3. Hepatic venous infiltration
4. Diaphragmatic infiltration

The chemotherapeutic regimen used was with Cisplatin, Adriamycin and the standard number of cycles was 3, with no major complications related to chemotherapy.

Re-Evaluation after Chemotherapy

Table 5: Re-evaluation of tumor size after Chemotherapy

Pre chemotherapy	Post chemotherapy
9 x 8 cm	7 x 5 cm
8 x 6 cm	5 x 5 cm
8 x 7 cm	6 x 4 cm
7 x 5 cm	4 x 3 cm
7 x 4 cm	5 x 4 cm
6 x 5 cm	3 x 3 cm

Table 6: Re-evaluation of Serum alfa feto protein after chemotherapy

Pre chemotherapy	Post chemotherapy
22,100	12,000
21,800	8000
16,850	4000
16,700	4400
13,400	1100
11,900	2020

Surgery

1. Primary surgery : 4
2. After chemotherapy : 6

Table 7 : Type of hepatic resection

Type of liver resection	Number of patients
Right Hepatectomy	7
Extended Right Hepatectomy	1
Non anatomic resection of segment	1
Left hepatectomy	1

The mean duration of surgery was 4 – 6 hours. The average amount of blood loss was 250 ml – 750 ml. The number of intra operative blood transfusions varied from 1 – 3 units.

Intra Operative Complications

1. Hypotension : 7
2. Significant bleeding : 4
3. Peri-operative rupture : 2

Post Operative Complications

1. Hypotension : 5
2. Hypoglycemia : 2
3. Hypovolemic shock : 2
4. Post operative Ascites : 4
5. Right lower lobe Atelectasis : 2

There was one post operative mortality due to persistent hypotension and unresponsive circulatory failure.

Histopathological examination report

1. *Mixed Epithelial* : 5
2. *Epithelial type* :
 - Fetal : 3
 - Embryonal : 2

Pre operative chemotherapy could have altered the final histology. Margins were clear in 9 and positive in 1 case. There were positive Lymph node metastasis in 2 cases.

COG (Children's Oncology Group) Staging

1. **Stage I** (Complete resection, clear margin, pure fetal histology) : 3
2. **Stage IU** (Complete resection, clear margin, unfavorable histology) : 5
3. **Stage II** (Gross total resection with microscopic residual tumor/perioperative rupture) : 2
4. **Stage III & IV** : nil

Post Operative Chemotherapy

1. Regimen : **Cisplatin, Adriamycin**
2. Number of cycles : 4

Complications included mortality in one case due to febrile neutropenia and sepsis. Available follow up was 3 months – 19 months. On Postoperative follow up, S AFP was less than 1000 ng/ml in all patients except 3 and USS Abdomen in 2 of these patients had evidence of recurrence, 4 -6 months after completion of chemotherapy. Maximum recurrence free survival on follow up was 16 months.

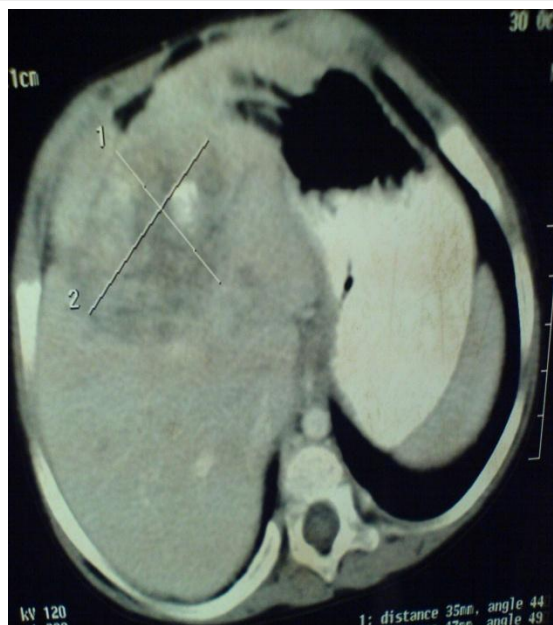


Figure 1: CT image showing Hepatoblastoma of the Right lobe



Figure 2: CT image showing Hepatoblastoma - right lobe of liver

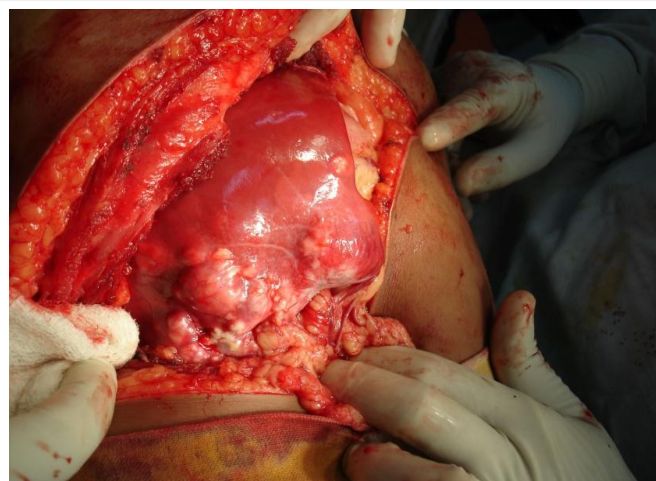


Figure 3: Intraoperative photograph of Hepatoblastoma

Conclusions

There was significant reduction in S. AFP and tumor size with the pre operative regimen of Cisplatin and Adriamycin. There was no significant morbidity from pre operative chemotherapy. Neo adjuvant chemotherapy improves the resectability in tumors without significant adverse events, signifying the importance of multimodality therapy.

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