Original Research Article

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Benign liver tumors in children-single centre experience

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ABSTRACT

Background: To assess the incidence and management of benign liver tumors.

Methods: Retrospective analysis of patients who were admitted with benign liver tumors in a Medical College Hospital in southern part of India during the period of 2006 to 2016 were analyzed.

Results: We have treated a total of 10 cases of benign liver tumors during the period of 2006 to 2016. The mean age of presentation was 2.1 year. Seven of the ten cases were haemangiomas, two babies had mesenchymal hamartomas, one had focal nodular hyperplasia. Of the seven babies with haemangiomas, four had focal, two had diffuse involvement of liver, one baby had giant haemangioma. Three of the 4 babies with focal haemangiomas regressed during follow up, one baby lost follow up. One of the two babies with diffuse haemangioma developed high output cardiac failure but responded to digoxin, diuretics and steroids and now under follow up. The new born baby with giant haemangioma involving left lobe of liver also had high output heart failure which was refractory to medical therapy and required left lobectomy. Two babies had large mesenchymal hamartomas involving right lobe required surgical resection. One patient with focal nodular hyperplasia was managed conservatively. Mean follow up was 36 months. There were no deaths.

Conclusions: Benign liver tumors are rare, most of them are haemangiomas. Only few of them require surgery. Large mesenchymal hamartomas can be promptly treated by resection with minimal mortality.

Keywords: Focal nodular hyperplasia, Haemangioma, Mesenchymal hamartoma

INTRODUCTION

Tumors in liver are 1-4% of all solid tumors in children, of which 45% are malignant and rest (>50%) are benign tumors.1 Haemangioendothelioma is the most common benign liver tumor in children followed by mesenchymal hamartomas.2

Although most hepatic haemangiomas can be safely observed until involution is documented, some children will need treatment due to progressive hepatomegaly, hypothyroidism and/ or cardiac failure. Mesenchymal hamartoma is the second commonest benign hepatic tumor in children.³ The standard treatment is complete

resection with healthy margins. Focal nodular hyperplasia (FNH) is a rare benign lesion, usually present as an incidental finding on a diagnostic study.^{4,5} This article summarizes the single centre experience of 10 cases of benign liver tumors and their management. The purpose of this article is to present our experience in the incidence of benign liver tumors in children in our area and its management.

METHODS

A retrospective data collected from the department of paediatrics and paediatric surgery from January 2006 to December 2016 in a medical college referral hospital.

Data of all babies who were admitted to paediatrics and paediatric surgery department during that period with diagnosis of benign liver tumor were included in the study. There was a total of 10 patients admitted with benign liver tumors during this period. Seven of the ten were females and three were male babies with male to female ratio 1:2.3. Seven of them were hepatic haemangiomas, two cases were mesenchymal hamartomas, one case was focal nodular hyperplasia. The data of these 10 patients was analysed for presenting symptoms, investigations, imaging's management, postoperative complication and associated mortality. Alpha feto protein estimation was done in all babies with liver masses as a base line investigation. All these patients were followed up for recurrence. The follow up period is minimum 6 months to maximum 3 years. During follow up routine ultrasonography of abdomen and chest x-Ray and tumor markers [where ever applicable] and CT scan abdomen were done. Incidentally diagnosed benign liver tumors in patients admitted for other problems or diagnosed during autopsy were excluded from the study.

RESULTS

A total of 10 babies with benign liver tumors were treated during the period January 2006 to December 2016. There were 3 boys and 7 girls. The mean age at presentation was 2.1 year (ranging from 20 days to 3 years). The commonest presentation is mass per abdomen and hepatomegaly. Seven of the ten cases were hepatic haemangiomas, two had diffuse involvement of liver. Both of them also had cutaneous haemangiomas, one new born had giant haemangioma involving left lobe of liver, one of the two cases with diffuse involvement of liver developed high output cardiac failure but responded to digoxin, diuretics and steroids. The Newborn with giant haemangioma who also had high output heart failure was refractory to medical therapy and required left lobectomy. This baby required redo laparotomy for persistent oozing from liver surface.

Four children had focal haemangiomas and required only follow up. Three of the four with focal haemangiomas regressed during follow up. One patient lost follow up. Two babies had large mesenchymal hamartomas involving right lobe required surgical resection. one patient with focal nodular hyperplasia was managed conservatively and regressed during follow up of 24 months. Mean follow up period was 36 months (ranging from 6months to 3 years). Six out of seven babies with haemangiomas managed conservatively and only one, who was refractory to medical therapy required surgery. Haemangioma regressed in all five babies managed conservatively (one baby lost follow up). No recurrence of haemangioma in a baby who underwent lobectomy during follow up of 3 years. Both the babies with large mesenchymal hamartomas required surgery. Alpha-feto protein not significantly elevated in babies with haemangioma but marginally elevated in babies with mesenchymal hamartoma. No recurrence of the lesion

was observed 2 years after surgery and both are still under follow up. There were no deaths.

DISCUSSION

Primary hepatic tumors are rare tumors in children. They account for about 5%-6% of all intra-abdominal masses and represent between 0.5% and 2% of all paediatric neoplasms.⁶ Liver masses in children can be benign, malignant, or indeterminate. About one third of liver paediatric liver masses are benign.⁷⁻¹⁶ A total of 10 patients with benign liver tumors were treated in our institute over a period of 10 years from January 2006 to December 2016. Seven of the 10 babies with benign liver tumors were haemangiomas, two were mesenchymal hamartomas, one with focal nodular hyperplasia. Haemangio-endothelioma is the most common benign solid liver tumor in our series, followed by mesenchymal hamartomas and rarely focal nodular hyperplasia, hepato cellular adenomas. We agree with Chung EM et al, and stocker JT et al, who also reported as infantile hepatic haemangioendothelioma as most common benign tumor followed by mesenchymal hamartoma. 17,18 Two of the total seven hepatic haemangioma were diffuse and rest were focal this is in comparison with Glass et al and Helmberger TK et al who reported that half of their cases were solitary and rest were multifocal. 19,20

We have treated 7 babies with haemangioma of liver, of them 6 were responded to conservative treatment. One patient with giant haemangioma of left lobe of liver which is refractory to medical treatment required surgery. We have treated two cases of large mesenchymal hamartomas, both of them were treated with surgical resection. Only 3 of 10 patients with benign liver tumors required surgery. This is in comparison with Quresh SS et al, who reported that one third of their patients with benign liver tumors were managed with surgical excision, which comprised 11% of their re-sectional practice over a period of 10 years.²¹ They have also reported that there was no mortality in their series and none of their patient had recurrence.

There was no mortality in our series and None of our patients had local recurrence, which is comparable with Qureshi et al and Franconis et al who had reported benign liver tumors constituting 42% of all primary neoplasms of liver with mortality rate of 4%. ^{2,21}

Haemangioma was the commonest benign liver tumor constituting 70% of all benign tumors in our series this is in comparison with other authors who have reported haemangioma constituting 72% of all the benign tumors in their series.³

Most of the liver haemangiomas can be safely followed up. Two babies in our series with large haemangiomas developed high output failure one baby responded to digoxin, diuretics and steroids another baby with giant haemangioma was refractory to the above treatment and required left lobectomy. The resected specimen of liver haemangioma is shown in Figure 1.



Figure 1: Resected specimen of giant haemangioma involving left lobe of liver.

It was reported that recently introduced propranolol showing excellent results in diffuse hepatic haemangiomas with high output failure and even with hypothyroidism.³ They also reported that propranolol emerged as first line of treatment in all high risk infantile haemangiomas, surpassing the corticosteroid.

Mesenchymal hamartomas are second most common benign liver tumor accounting for 8% of all paediatric hepatic tumors. ^{22,23} Both babies in our series had large tumors with both cystic and solid components affecting the right lobe of liver one of which is pedunculated. Both babies were treated by wide resection with healthy margins. Resected specimens and its cut sections of two cases of mesenchymal hamartomas were shown in Figure 2, Figure 3, Figure 4 and Figure 5.



Figure 2: Large mesenchymal hamartoma involving the right lobe of liver.

Non-operative management is advised by some authors in infants with a biopsy proven mesenchymal hamartoma with prominent vascular component (has potential for spontaneous regression), but the standard treatment is complete resection with the goal of achieving negative margins.³ Laparoscopic resection can be tried in pedunculated lesions. Enucleation (encapsulated lesion), marsuplisation are other options but recurrence is common.^{24,25} Some authors advocate liver transplantation for unrespectable mesenchymal hamartomas of liver.²⁶ Long term follow up of children with hepatic mesenchymal hamartomas is needed because of recurrence.³



Figure 3: Cut section of above specimen.



Figure 4: Pedunculated mesenchymal hamartoma from right lobe of liver.



Figure 5: Cut section of above specimen.

Focal nodular hyperplasia and hepatic adenomas relatively rare tumors in children and Constitutes only less than 2% of all benign hepatic tumors.²⁷ Focal nodular hyperplasia seen only one of our babies. We did not do surgery as it is small and regressed during follow up of 2-years. We agree with other authors who advised follow up in asymptomatic FNH and surgery if the lesion is progressed or more than 5cm³. Di Stasi et al detected a reduction in size or complete resolution of FNH in 50% of patients that were followed-up by US for a mean period of 33 months.²⁸

CONCLUSION

Benign liver tumors are rare, commonest of them are hemangiomas. Most of the hemangiomas required just follow up. Only few of them require surgery. Large mesenchymal hamartomas can be promptly treated by resection with minimal mortality.

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Institutional Ethics Committee

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