Original Article

A Study of Intra Abdominal Masses in Pediatric Age Group
(Hepatosplenomegaly Secondary to Portal Hypertension Excluded)

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ABSTRACT

Aims and Objectives: To study incidence of various intra abdominal masses in pediatric age group, their age and gender incidence, clinical presentation, incidence and types of intraperitoneal and retroperitoneal abdominal masses, incidence of malignancy, urological and non-urological masses, anatomical origin and management in pediatric age group.

Methods: A prospective observational study was conducted on 30 patients of 0-12 years age groups who presented with intra abdominal mass at Dr.D.Y. Patil Medical College, Hospital and Research Centre, Pune over a period of 2 years. Cases of hepatosplenomegaly, including those caused by portal hypertension, were excluded from the study.

Results and Conclusion: In our study of Intra abdominal masses, excluding hepatosplenomegaly, in
INTRODUCTION
The abdomen is rightly known as "Pandora's Box" and as long as its lid remains unopened, nobody knows what lies inside it. The discovery of an abdominal mass in a child usually presents as a challenging problem in diagnosis and management both to the pediatrician and surgeon. Knowledge of differential diagnosis of intra abdominal masses is very essential for accurate diagnosis, evaluation and treatment.

AIMS AND OBJECTIVES
1. To study incidence of various types of intra abdominal masses in pediatric age group
2. To assess age and gender incidence and clinical presentation of various intra abdominal masses in pediatric age group
3. To assess incidence and types of intraperitoneal and retroperitoneal abdominal mass in pediatric age group
4. To assess incidence of benign and malignant intra abdominal masses in pediatric age group
5. To assess incidence of Urological and Non-Urological intra abdominal masses in pediatric age group
6. To assess anatomical origin of various intra abdominal masses in pediatric age group
7. To assess various therapeutic measures in management of intra abdominal masses in pediatric age group

MATERIALS AND METHODS
A prospective observational study was conducted on 30 patients of 0-12 years age groups who presented with intra abdominal mass over a period of 2 years. Cases of hepatosplenomegaly, including those caused by portal hypertension, were excluded from the study.

DISCUSSION
The differential diagnosis of pediatric intra-abdominal masses is broad and is based on age, location, and structure of the lesion.

1] Incidence of Various Types of Intra Abdominal Masses In Pediatric Age Group
In our study, majority of the cases of intra abdominal mass were due to intussusception (26.6%) followed by Wilm's tumour and Hydronephrosis. (Table no. 1) Similar findings were observed by Mandeville K et al in the study "Intussusception clinical characteristics and imaging characteristics" in 2012 in which intussusception was one of the major causes of intra abdominal masses in children. (1)

2] Age and Gender Incidence and Clinical Presentation of Various Intra Abdominal Masses in Pediatric Age Group
In our study, majority of the cases were in the age group 1 month to 1 year, followed by 3 years to 7 years with male to female ratio of 1:1 (Table no 2) Similar findings were observed by Hanif G et al in the study "Intra abdominal tumors in children" in 2004 in which majority of the cases were in the age group below 5 years with male to female ratio of 1.1 : 0.9. (2) In our study, majority of the cases presented as pain in abdomen followed by lump in abdomen. (Table no. 2) Similar findings were observed by Cuschieri A et al in the study "Disorders of abdominal wall and peritoneal cavity" in 2002 in which majority of the cases presented with pain and lump in abdomen.
3) Incidence and Types of Intraperitoneal and Retroperitoneal Abdominal Mass in Pediatric Age Group
In our study, ratio of intraperitoneal and retroperitoneal abdominal mass in pediatric age group was 1:1. Majority of the intra peritoneal mass were due to intussusception. Majority of the retro peritoneal mass were due to Wilm's tumor. (Table no. 3)

Similar findings were observed in the study " Acute intussusception in infants and children. Incidence, clinical presentation and management: a global perspective" in which intussusception was the major cause of intra peritoneal abdominal mass. (4)

Similar findings were observed by Ritchey ML et al in the study " Neonatal Wilm's tumor" in which Wilm's tumor was the major cause of retro peritoneal abdominal mass. (5)

4) Incidence of Benign and Malignant Intra Abdominal Masses in Pediatric Age Group
In our study, majority (66.6%) of intra abdominal mass cases were benign and the remaining (33.3%) were malignant. (Table no. 4)

Similar findings were observed in the study " Malignant abdominal masses in children: quick guide to evaluation and diagnosis" by Golden CB et al in 2002 in which majority (72%) of the intra abdominal masses were benign. (6)

5) Incidence of Urological and Non Urological Intra Abdominal Masses in Pediatric Age Group
In our study, majority (66.6%) of intra abdominal mass were due to non-urological causes. (Table no. 5)

Similar findings were observed in the study " Investigation of abdominal masses" by AC Mbamali et al in 2002 in which majority (74%) of intra abdominal mass were due to non-urological causes. (7)

6) Anatomical Origin of Various Intra Abdominal Masses In Pediatric Age Group
In our study, majority (36.6%) of the intra abdominal masses were arising from gastrointestinal system, followed by genitourinary system. (Table no. 6)

Similar findings were observed by Armand E. Brodeur et al in the study "Abdominal masses in Children: Neuroblastoma, Wilms tumor and other considerations" in which majority of intra abdominal masses were arising from gastrointestinal system.

7) Therapeutic Measures in Management of Intra Abdominal Masses In Pediatric Age Group
In our study, majority (73.6%) of the cases were managed by surgery alone, followed by surgery and chemotherapy combined, chemotherapy alone and hydrotherapy. (Table no. 7)

| Sr.No. | Type Of Lesion            | No. of Cases | Percentage (%) |
|--------|---------------------------|--------------|----------------|
| 01     | Wilm's Tumour             | 4            | 13.33 %        |
| 02     | Hydronephrosis            | 4            | 13.33 %        |
| 03     | Retroperitoneal Teratomas | 2            | 6.66%          |
| 04     | Mesenteric Cysts          | 3            | 10%            |
| 05     | Infantile Pyloric Stenosis | 2        | 6.66%          |
| 06     | Intussusception           | 8            | 26.66%         |
| 07     | Neuroblastoma             | 2            | 6.66%          |
| 08     | Retroperitoneal Lymphangioma | 1      | 3.33%          |
| 09     | Tb Abdomen                | 1            | 3.33%          |
| 10     | Lymphoma                  | 1            | 3.33%          |
| 11     | Pyonephrosis              | 2            | 6.66%          |
| Total  |                           | 30           | 100%           |
TABLE 2: Age and Gender Incidence and Clinical Presentation of Various Intra Abdominal Masses in Pediatric Age Group

| Sr. No. | Age                  | No. of Cases | Percentage (%) |
|---------|----------------------|--------------|----------------|
| 01      | 0 - 1 Month          | 03           | 10%            |
| 02      | 1 Month - 1 Year     | 10           | 33.33%         |
| 03      | 1 Year - 3 Year      | 04           | 13.33%         |
| 04      | 3 Year - 7 Year      | 08           | 26.66%         |
| 05      | 7 Year - 12 Year     | 05           | 16.66%         |
| Total   |                      | 30           | 100%           |

| Sr. No. | Gender | No. Of Cases | Percentage (%) |
|---------|--------|--------------|----------------|
| 01      | Male   | 15           | 50%            |
| 02      | Female | 15           | 50%            |
| Total   |        | 30           | 100%           |

| Sr. No. | Clinical Presentation | No. Of Cases | Percentage (%) |
|---------|------------------------|--------------|----------------|
| 01      | Abdominal Distention   | 15           | 50%            |
| 02      | Lump In Abdomen        | 19           | 63.33%         |
| 03      | Pain In Abdomen        | 21           | 70%            |
| 04      | Vomiting               | 12           | 40%            |
| 05      | Fever                  | 13           | 43.33%         |
| 06      | Constipation           | 05           | 16.66%         |

TABLE 3: Incidence and Types of Intraperitoneal and Retroperitoneal Abdominal Mass in Pediatric Age Group

| Sr. No. | Type Of Lesions | No. Of Cases | Percentage (%) |
|---------|-----------------|--------------|----------------|
| 01      | Intraperitoneal  | 15           | 50%            |
| 02      | Retroperitoneal  | 15           | 50%            |
| Total   |                  | 30           | 100%           |

| Sr. No. | Types Of Intraperitoneal Masses | No. Of Cases | Percentage |
|---------|----------------------------------|--------------|------------|
| 01      | Intussusception                  | 08           | 26.66 %    |
| 02      | Mesenteric Cysts                 | 03           | 10.00 %    |
| 03      | Lymphoma                         | 01           | 3.33 %     |
| 04      | Tb Abdomen                       | 01           | 3.33 %     |
| 05      | Infantile Hypertrophic Pyloric Stenosis (Ihps) | 02 | 6.66 % |
| Total   |                                  | 15           | 50 %       |

| Sr. No. | Types Of Retroperitoneal Masses | No. Of Cases | Percentage |
|---------|---------------------------------|--------------|------------|
| 01      | Wilm's Tumour                   | 04           | 13.33 %    |
| 02      | Hydronephrosis                  | 04           | 13.33 %    |
| 03      | Neuroblastoma                   | 02           | 6.66 %     |
| 04      | Teratoma                        | 02           | 6.66 %     |
| 05      | Pyonephrosis                    | 02           | 6.66 %     |
| 06      | Lymphangioma                    | 01           | 3.33 %     |
| Total   |                                  | 15           | 50 %       |
TABLE 4: Incidence of Benign and Malignant Intra Abdominal Masses in Pediatric Age Group

| Sr. No. | Type Of Lesion | No. Of Cases | Percentage |
|---------|----------------|--------------|------------|
| 01      | Benign         | 20           | 66.66 %    |
| 02      | Malignant      | 10           | 33.33 %    |
| Total   |                | 30           | 100 %      |

TABLE 5: Incidence of Urological and Non Urological Intra Abdominal Masses in Pediatric Age Group

| Sr. No. | System Involved | No. Of Cases | Percentage |
|---------|-----------------|--------------|------------|
| 01      | Urological      | 10           | 33.33 %    |
| 02      | Non Urological  | 20           | 66.66 %    |
| Total   |                  | 30           | 100 %      |

TABLE 6 : Anatomical Origin of Various Intra Abdominal Masses in Pediatric Age Group

| Sr. No | Anatomical Origin                        | Malignant Lump | Non Malignant Lump | Total | Percentage |
|--------|------------------------------------------|----------------|--------------------|-------|------------|
| 01     | Gastrointestinal System                  | 01             | 10                 | 11    | 36.66 %    |
| 02     | Genitourinary                            | 04             | 06                 | 10    | 33.33 %    |
| 03     | Others (Lymphoid Tissue, Neuroblastoma)  | 05             | 04                 | 09    | 30.00 %    |
| Total  |                                         | 10             | 20                 | 30    | 100 %      |

TABLE 7 : Therapeutic Measures In Management Of Intra Abdominal Masses In Pediatric Age Group

| Sr. No | Management                  | No. Of Cases | Percentage |
|--------|-----------------------------|--------------|------------|
| 01     | Medical Line of Treatment   | 01           | 3.33 %     |
| 02     | Surgery Only                | 22           | 73.66 %    |
| 03     | Surgery and Chemotherapy    | 02           | 6.66 %     |
| 04     | Chemotherapy                | 02           | 6.66 %     |
| 05     | Hydrotherapy                | 02           | 6.66 %     |
| 06     | Usg Guided Catheterisation  | 01           | 3.33 %     |
| Total  |                             | 30           | 100 %      |

CONCLUSION

In our study of Intra abdominal masses, excluding hepatosplenomegaly, in pediatric age group

1) Maximum age incidence was between 1 month to 1 year.
2) Males and females were equally affected.
3) Masses arise in equal proportion from intra as well as retro peritoneum
4) 2/3 rd of the intra abdominal masses were benign.
5) 2/3 rd of the intra abdominal masses had non-urological origin.
6) Intussusception was the commonest intra abdominal mass in the pediatric age group.
7) Wilms tumor and Hydronephrosis were the commonest masses found in urological origin.
8) Abdominal pain and lump were the commonest clinical presentation in pediatric age group.
9) Operative intervention was the best mode of management in majority of abdominal masses.

LIMITATIONS OF THE STUDY

However, our series is small and the paucity of literature in this field of comparing and evaluating various intra abdominal masses in pediatric age group refrains us from making any dogmatic conclusions.
Hence a further detail study in this regard is suggested to arrive at more concrete conclusions.
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