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Research Article

A STUDY OF 80 CASES OF STRIDOR IN INFANTS AND TODDLERS

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ABSTRACT

Objectives: We undertook this study to evaluate the clinical and radiological profile, treatment modalities adopted and to assess the importance of airway assessment in an infant presenting with stridor.

Materials and Methods: A study of an eighty cases of stridor in infants and toddlers conducted over two years (2013/14) at Malla Reddy Hospital and NH-Malla Reddy Hospital.

Results: A total of 80 patients were studied. The youngest being three months of age and eldest four years. The commonest cause was found to be Laryngomalacia (40%), followed by FB inhalation (18.75%).

Conclusion: Stridor in children constitute emergency in otolaryngological practice. A well planned evaluation and procedure is always better and delay in diagnosis and management leads to morbid outcomes.

Keywords: Stridor, Laryngomalacia, Foreign bodies, tracheostomy.

INTRODUCTION

Stridor derived from Latin meaning "creaking or grating noise" is an abnormal, high-pitched sound produced by turbulent airflow through a partially obstructed airway at the level of the supraglottis, glottis, sub glottis, or trachea¹.

Stridor should be differentiated from stertor, which is a lower-pitched, snoring-type sound generated at the level of the nasopharynx, oropharynx, and, occasionally, supra glottis^{2,3}.

Stridor is a symptom, not a diagnosis or a disease, and the underlying cause must be determined. It may be inspiratory, expiratory, or biphasic, depending on its timing in the respiratory cycle, and the three forms each suggest different causes, as follows:

- Inspiratory stridor suggests a laryngeal obstruction
- Expiratory stridor implies tracheobronchial obstruction
- Biphasic stridor suggests a subglottic or glottis anomaly

Various causes of stridor have been elucidated; the current study focusses on etiologic pathophysiology and clinical presentation of stridor.

MATERIALS AND METHODS

Out of twenty thousand plus OPD seen in our hospitals during a period from January 2013 till January 2015, eighty patients who presented with stridor within four years of age were evaluated and studied.

The patients after admission were done a preliminary evaluation followed by a tracheostomy if needed and later a complete workup was done and documented. The patients were followed every month for six months. The results are cumulated and summarized.

OBSERVATIONS AND RESULTS

In our study out of 80 cases, 46 were males and 34 were females. The youngest patient was three months of age and the eldest being four years of age.

Out of 80 cases that were studied, 32 children had Laryngomalacia, 15 children had Foreign body obstruction, 5 cases were of Bilateral abductor palsy, 6 cases had traumatic laryngotracheal stenosis, 4 children had laryngeal diphtheria, 4 cases had respiratory papillomatosis, 2 cases each of anterior glottic web and acute epiglottitis, one case each of croup and endolaryngeal cyst (Table -1).

Table 1: Incidence of cases

Diagnosis	Number of Cases	Percent of Cases
Laryngomalacia	32	40%
Foreign body obstruction	18	18.75%
Bilateral Abductor palsy	5	6.25%
Traumatic Laryngotracheal stenosis	5	6.25%
Post intubational	6	7.5%

Tracheal stenosis		
Respiratory papillomatosis	4	5%
Diphtheria	4	5%
Anterior glottic web	2	2.5%
Acute epiglottitis	2	2.5%
Croup	1	1.25%
Endo laryngeal cyst	1	1.25%

Out of 32 children that were diagnosed with laryngomalacia, 20 were male and 12 were female children. All these were treated conservatively and were controlled of all respiratory infections, they all are followed for six months every month. Out of these 22 were relieved of symptoms by the age of 24 months.

Foreign bodies were next commonest cause which included tamarind seeds, custard apple seeds and ground nuts. 8 were males and 7 were females. All of them were evaluated bronchoscopically under general anaesthesia.

Four out of five cases presented with abductor palsy were males. Tracheostomy was done in all the cases; unilateral posterior cordectomy was done in four cases. Out of these two kids have been successfully decannulated.

Out of six cases diagnosed with post intubational stenosis, 3 were males and 3 females. Montgomery T-tube stenting was done in all the six cases and were successfully decannulated.

Out of 4 patients diagnosed with diphtheria 3 were males and 1 female, 3 had underwent emergency tracheostomy followed by medical management. All of the have been successfully decannulated later.

Out of four cases of respiratory papillomatosis 3 were female and 1 male all underwent microlaryngeal excision of the lesions. Only one patient required tracheostomy.

The two cases of glottis web were male and successfully underwent laser excision of the anterior web and are now symptom free.

The other case of endolaryngeal cyst was excised and was decannulated on post-operative day three.

The child with croup was treated conservatively and was relieved of symptoms.

DISCUSSION

The vital first step in evaluating any child presenting with stridor is to assess the need for urgent airway intervention. Initial evaluation should be non-invasive as the paediatric airway can be quite tenuous and compromise must be avoided. Indicators of severity include respiratory rate, level of consciousness/mental status, and accessory muscle use⁴. If the clinical situation merits, it is safer to bring the patient to operation theatre to secure the airway, diagnostic and therapeutic endoscopy can be performed at the same time.

Fortunately, most children who present with stridor are stable enough to undergo a complete history and physical examination. The single best test if advocated is probably flexible laryngoscopy, which allows a quick and usually excellent view of nasal cavity, nasopharynx and laryngopharynx. It is important to realize that flexible

laryngoscopy is not a substitute for a formal airway evaluation in operating room. One must realize that a single finding like laryngomalacia does not rule out other airway problems as in children more than one cause could co-exist.

In this current study, various aetiologies have been observed. Laryngomalacia is the most common cause with 1:6.1(M:F) ratio, showing more incidence in female as noted by Hollinger et al⁵. The diversity of laryngomalacia presentation and its frequent association with different states of awareness correlates with Belmont and Grundfast observation⁶ that it probably represents a localized hypotonia than an anatomic lesion.

Foreign bodies of tracheobronchial tree were seen in 15 patients with M: F ratio of 1.1:1 showing a bit more incidence in males. Radiology may not necessarily be the primary means of confirming the diagnosis⁷.

Bilateral abductor palsy was seen in 5 cases with 4:1 M: F ratio, with posterior cordectomy done as surgical correction followed by decannulation. CO₂ laser with acublade mode was used. According to Marc Remacle et al⁸ superpulse mode increases cutting effect and reduces heat generation, thus reducing oedema.

A predominance of females with tracheal stenosis has been reported in by Nicholas Zias et al⁹ as noted in our study. Of the cases of laryngotracheal stenosis two cases were of blunt trauma and three were of penetrating trauma. Laser excision was done as treatment along with tracheostomy and Montgomery T-tube stenting.

Respiratory papillomatosis was seen at the ratio of 2:1 all were tracheotomised and underwent debulking with endoscopic microdebrider. Pasaquale et al¹⁰ reported improved voice quality, less operating time, less mucosal injury, cost benefit for microdebrider compared to CO₂ laser.

There were only 2 cases of acute epiglottitis with M: F ratio of 1:1. Frantz et al¹⁰ reported a decline in Paediatric acute epiglottitis, most likely the explanation is introduction of a series of efficacious vaccines against H influenza type B¹¹.

In current study 2 cases of anterior glottis web were managed by Laser excision and keel placement for 6 weeks, followed up for a year without any recurrence similar to the study by Benmansour et al¹².

In this study male predilection extended beyond laryngomalacia; overall, males outnumbered females dominating almost every category of presentation. This pattern has been the rule rather than exception, with large series of laryngotracheal obstruction showing consistently 70% rate of male predominance^{13, 14}.

CONCLUSION

Stridor in children constitute emergency in otolaryngological practice, in this study Laryngomalacia constituted the major disorder, followed by foreign body obstruction. Tracheostomy is the common emergency procedure done to relieve obstruction. Flexible fiberoptic bronchoscopy (FOB) is a handy tool but is not a substitute for formal airway evaluation done under anaesthesia in an operating room. A well planned evaluation and procedure is always better and delay in diagnosis and management leads to morbid outcomes.

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