



CLINICAL PROFILE OF STRIDOR IN PEDIATRIC AGE GROUP 0-12 YEARS IN TERTIARY CARE HOSPITAL

Suganya, C*., Ramesh, S and Nathiya, S

Department of Pediatrics, Raja Muthaiah Medical College and Hospital, Annamalai Nagar, Chidambaram - 608 002, Tamil Nadu, India

ARTICLE INFO

Article History:

Received 11th July, 2016
Received in revised form 13th August, 2016
Accepted 14th September, 2016
Published online 26th October, 2016

Key words:

Stridor, Croup, Laryngomalacia

ABSTRACT

Introduction: Stridor is an abnormal, harsh, high pitched inspiratory sound produced by turbulent airflow through partially obstructed airway of the laryngeal area or the extrathoracic trachea. Croup & Laryngomalacia are the most common infectious & congenital etiology of stridor respectively.

Aim: To analyze etiology, pathogenesis, treatment and outcome of stridor in pediatric age group (0 – 12 years) in our institute

Materials and Methods: This is an observational study of 50 cases of stridor in infants and children below 12 years presented at The Department of Pediatrics, Rajah Muthiah Medical College and Hospital, Chidambaram over two years (2014/16)

Results: Majority of stridor cases are in the age group of less than 1 year, common etiologies are Croup (56%) and Laryngomalacia (26%). Males are more commonly affected

Conclusion: Majority of pediatric cases presenting with airway problems necessitates the immediate evaluation and management and delay in diagnosis leads to morbid outcome

Copyright © 2016 Suganya, C., Ramesh, S and Nathiya, S. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

INTRODUCTION

Evaluation of noisy breathing in infants and children begins with careful history taking and physical examination focusing on the patient's age and character of the noisy breathing. Airway resistance is inversely proportional to fourth power of the radius. Because infant's or child's airway is narrow, minor reductions in cross sectional area as a result of mucosal edema or other inflammatory processes cause an exponential increase in airway resistance⁽¹⁾. The Word Stridor is derived from the Latin word "Stridulus" which means creaking, whistling, or grating noise. Stridor is an abnormal, harsh, high pitched inspiratory sound produced by turbulent airflow through partially obstructed airway of the laryngeal area or the extrathoracic trachea.^(2,3) Stridor is a predominant inspiratory monophonic noise. Stridor should be differentiated from stertor later which is described as the low pitched inspiratory snoring sound originating from nasal or nasopharyngeal obstruction⁽²⁾. It's not a diagnosis, but a sign of upper airway obstruction⁽¹⁾. Various etiologies of stridor have been elucidated in this study are correlated with recent literature and conclusions made.

MATERIALS AND METHODS

This observational study was carried out in the Department of pediatrics, RMMCH, Chidambaram from October 2014 – September 2016. Fifty patients presented with stridor between

the age group 0-12 years were included. Complete workup was done and documented. The patients were followed every month for six months.

OBSERVATIONS AND RESULTS

In this study, out of 50 cases, 49 were inpatients (98%) and rest of one patient (2%) was treated as outpatient. Majority of them in the age group of less than one year (62%) followed by 4-12 years (24%) and then 1-4 years (14%). Fig.1.

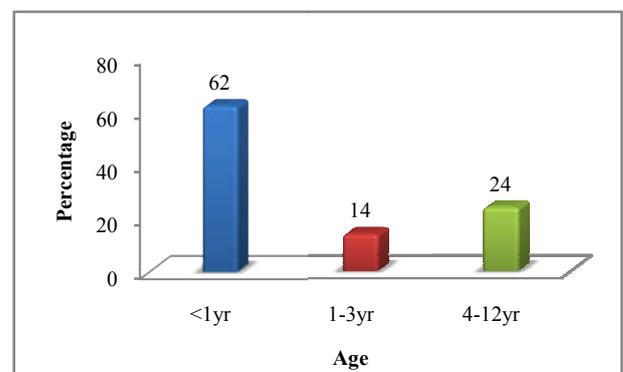


Fig. 1 Age Distribution

In this study, out of 50 cases, male children (70%) are more common than female children (30%), (Fig.2). 28 children had croup, 13 had laryngomalacia, 3 had angio neurotic edema, 2

had foreign body aspiration, 2 had post intubation stridor, 1 had each of pierre robin sequence and ranula repair respectively (Table.1).

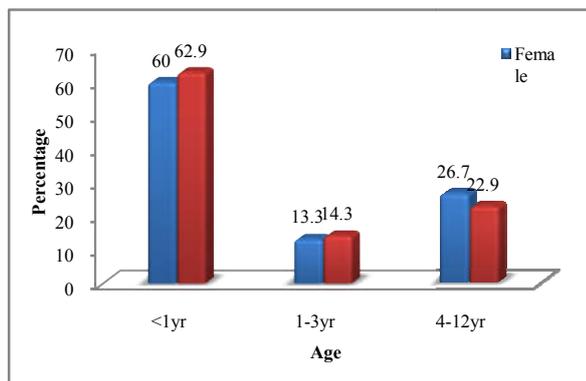


Fig. 2 Age and Sex Distribution

Table 1 Incidence of cases

S. No.	Etiology	No. of Patients (N=50)	Percentage
1	Croup	28	56%
2	Laryngomalacia	13	26%
3	Angioneurotic edema	3	6%
4	FB aspiration	2	4%
5	Post extubation stridor	2	4%
6	Ranula repair	1	2%
7	PRS	1	2%

Of all the symptoms, stridor was the main symptom in all cases followed by Retractions (98%), cough (74%), tachypnea (72%), fever (64%), rhinorrhea (60%), nasal flaring (60%) and hoarseness (54%) were seen. (Table 2.). Majority of having inspiratory (96%) followed by biphasic in (4%) of cases (Fig. 3).

Table 2 Distribution of Signs and Symptoms

Signs and Symptoms	No. of patients (n=50)	Percentage
Retraction	49	98.0%
Cough	37	74.0%
Tachypnea	36	72.0%
Fever	32	64.0%
Rhinorrhea	30	60.0%
Nasal flaring	30	60.0%
Hoarseness	27	54.0%
Cyanosis	0	0

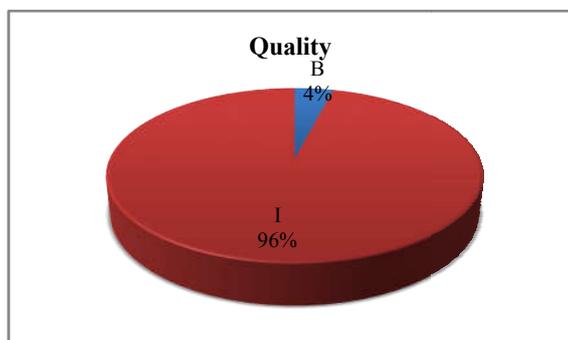


Fig. 3 Stridor quality with Respiratory Cycle

Out of 50 cases 76% of cases were presented with acute symptoms and 24% of cases were presented with chronic stridor (Fig. 4).

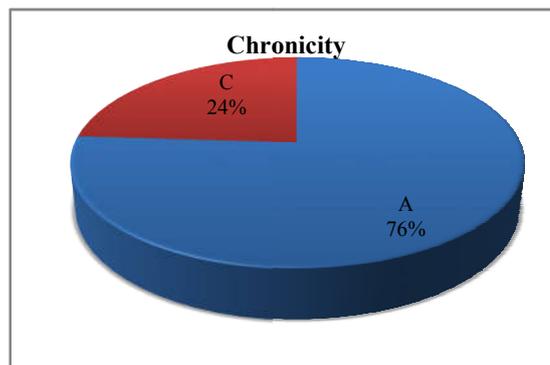


Fig. 4 Distribution of Chronicity of Symptoms

Out of 28 children that were diagnosed with croup, 18 were male and 10 were female children. All were treated with steroids and nebulised epinephrine according to westley croup score and were controlled of all respiratory infections.

Laryngomalacia was the next commonest cause which was the commonest congenital anomaly in the study.¹¹ Were males and 2 were females. Laryngoscopy was done for 11 cases and one infant underwent surgery.

Two out of three cases presented with angioneurotic edema were males. Anti histamines, systemic steroids and parenteral epinephrine were given and relieved of symptoms. Two cases diagnosed as post intubation stridor, all were males.

Foreign body aspiration was seen in 2 cases of which 1 male and 1 female. All were bronchoscopically evaluated and removed. The other cases of ranula repair and PRS were treated medically and conservatively.

DISCUSSION

The initial evaluation of a child with stridor must begin with a rapid assessment of respiratory status to identify those who need resuscitation⁽⁴⁾. Taking a proper history and clinical evaluation determines emergent and non emergent etiologies. In this study, various etiologies have been observed. Out of these, acute cases outnumbered chronic cases. Rupa .V, Raman R *et al*⁽⁵⁾ showed similar study.

Among the acute causes, croup is the commonest cause of stridor with more incidence in males. Robert H. Stroud and Norman R. Friedman *et al*⁽⁶⁾ observed similar results. All cases were benefited according to westley croup score where moderate cases of croup were treated with oral dexamethasone and IM dexamethasone. Russell K, Wiebe N & Saenz A *et al*⁽⁷⁾ supported this study. In this study, severe croup cases were treated with nebulised epinephrine and parenteral dexamethasone. Bjornson C, Russell K & Vandermeer B *et al*⁽⁸⁾ supported this study.

Laryngomalacia was the commonest cause for chronic stridor with male predominance. Holinger LD *et al*⁽⁹⁾ observed the same results.

Foreign body aspiration was seen in 2 cases with male: female ratio of 1:1 of younger than 3 years. Rao Prabhakara. Y and Biraj Vamshi Krishna *et al*⁽¹⁰⁾ studied the similar result in their study of M: F Ratio of 1.1:1. Most common symptom in this study was inspiratory stridor cough, respiratory difficulty, rhinorrhea in 100%. Abhishek Jaswal and Utpal Jana *et al*⁽¹¹⁾ had similar symptoms in their study.

Angio neurotic edema were seen in 3 patients with male predominance with an idiopathic origin. De silva I L *et al*⁽¹²⁾ showed supported this study most cases with male predominance and stated that there was no statistically significant difference between males and females with respect to the age of presentation and risk factors.

Post extubation stridor was seen in 2 cases with male predominance. In this study, Post extubation stridor was treated with parenteral steroids and nebulised adrenaline. Regina Grigolli cesar *et al*⁽¹³⁾ supported this study that dexamethasone and L-epinephrine did not reduce the clinical progression of airway obstruction.

Ranula repair and Pierre Robin sequence constitute one case each. Stridor due to ranula repair was treated with nasopharyngeal airway. In this study, Pierre robin sequence presented with stridor, swallowing difficulty and sleep disordered breathing who was treated conservatively like prone positioning, alternative feeding practices and nasopharyngeal airway. Nirupan V & Cooper T *et al*⁽¹⁴⁾ supported this study. In the current study, males were predominantly seen.

Favourable outcome were observed in all studied cases. There was no morbidity and mortality in this study.

In the follow up period, 82% of cases were free of stridor and 18% of cases decreased in severity.

CONCLUSION

In the study, acute cases were more than chronic cases. Identifying Stridor in children needs proper history taking and thorough physical examination remains as the important key in assisting the diagnosis and management in the Emergency room. Presence of red flag signs of stridor should be looked for in cases of infectious causes of stridor. Delay in diagnosing the cause of the stridor may lead to mismanagement of the patient and causing serious morbidity. Progression of airway obstruction may be rapid in cases of infectious etiology necessitating prompt diagnostic and therapeutic maneuvers.

References

1. Genie E, Roosevelt Acute Inflammatory Upper Airway Obstruction. Nelsons Textbook of Pediatrics vol 1 pp 2031-32 20th Ed.

2. Bowdewyns A, Claes J, Van de Heyning P. Clinical practice: an approach to stridor in infants and children. *Eur J Pediatr* 2010 Feb; 169(2): 135-41
3. Benson BE, Baredes S, Schwartz RA Stridor. Medscape Reference by WebMD, January 26, 2010.
4. Derek S Wheeler *et al*. life threatening Diseases of the Upper Respiratory Tract. Pediatric Critical Care Medicine 2014
5. Rupa V, Raman R. Aetiological profile of paediatric laryngeal stridor in an Indian hospital. *Ann Trop Paediatr*. 1991;11(2): 137-41
6. Stroud RH, Friedman NR (2001) An update on inflammatory disorders of the airway. *Am J Otolaryngol* 22: 268.
7. Russell K, Wiebe N, Saenz A *et al*. Glucocorticoids for croup. *Cochrane Database Syst Rev*. 2004;
8. Bjornson C, Russell K, Vandermeer B, Klassen TP, Johnson DW. Nebulised epinephrine for croup in children. *Cochrane Database Syst Rev* 2013
9. Holinger L D Etiology of stridor in the neonate, infant, and child *Ann Otol Rhinol Laryngol* 1980 Sep-Oct; 89(5 pt i): 397-400
10. Rao & Biraj UJMDS 2015, 03 (02): Page 60-62
11. Jaswal, A, Jana. U & maiti, P.K. *Indian J Otolaryngol Head Neck Surg* (2014) 66: 156.
12. I L de Silva, S. S. Mehr, D. Tey, M L K. Tang. Pediatric anaphylaxis: a 5 year retrospective review. *Allergy* 2008; 63; 1071-1076
13. Regina Grigolli cesar, Carvalho W B, L- Epinephrine and dexamethasone in postextubation airway obstruction: a prospective randomized, double blind placebo- controlled study. *International Journal of Pediatric Otorhinolaryngology*. Vol 73 (12):1639-1643, 2009
14. Nirupan V, Cooper T, Witnams M, El-Hakim H. Primary aerodigestive presentations of pierre robin sequence/complex and predictive factors of airway type and management. *Int J of Pediatric Otorhinolaryngology* vol 78(2014) 1726-1730.

