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ORIGINAL ARTICLE

To Compare the Mean Decrease in Respiratory Distress Assessment Score after Nebulization With Salbutamol Vs Epinephrine in Children With Acute Bronchiolitis

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ABSTRACT

Aim: To compare the mean decrease in respiratory distress assessment score after nebulization with salbutamol vs epinephrine in children with acute bronchiolitis.
Study Settings: Department of Pediatrics, Khyber Teaching Hospital Peshawar.
Study design & duration: Randomized Controlled Trial for six months from 13/6/2018 to 13/12/2018.
Methodology: In this study, 105 patients in each group were studied. Baseline RDAI score was calculated. All the patients were randomly divided in two groups. Children in group A were Nebulized with Epinephrine (0.1 ml/kg) while children in group B were with salbutamol nebulization (5mg/ml solution) ½ml+3ml normal saline repeated every hour. All children were reassessed at the end of 4th dose (4th hour) and RDAI were recalculated for all patients.
Results: In age of 2-12 months, 63% infants have nebulization with epinephrine and 70% cases with salbutamol while in age group 13-18 months, 37% cases nebulized with epinephrine and 30% infants with salbutamol. Mean±SD was 10.57±4.22 and 11.63±3.14 months respectively. Regarding sex, 60% males were nebulized with epinephrine and 53.3% with salbutamol while 40% females were nebulized with epinephrine and 46.7% cases with salbutamol. Mean RDAI at baseline was calculated as 11.57+2.21 with epinephrine and 11.3+2.14 with salbutamol and P value was 0.3695.
Conclusion: Mean reduction in RDAI with epinephrine nebulization is more as compared to nebulization with salbutamol in children of acute bronchiolitis.
Keywords: RDAI, nebulization, salbutamol, epinephrine, acute Bronchiolitis.

INTRODUCTION

Bronchiolitis is an acute inflammatory condition of the bronchioles and viral infection is main cause. It occurs in any age and severe symptoms are only seen in young infants[1]. Bronchiolitis usually affects children younger than 2 years, with a peak in infants aged 3-6 months. It is generally a self-limiting condition and is most commonly associated with respiratory syncytial virus[2]. In the world, acute respiratory tract infection in children >5 years is still the main cause of childhood mortality[3].

An estimated 150 million new cases occur annually; 11-20 million (7-13%) of these cases are severe. 95% of all cases occur in developing countries with over 160,000 deaths each year all over the world[4]. In a report, bronchiolitis was associated with 12,474 inpatient and outpatient physician contacts during the first year of life[5].

To compare the mean decrease in respiratory distress assessment score after nebulization with salbutamol vs epinephrine in children with acute bronchiolitis.

METHODOLOGY

This randomized controlled trial in Pediatrics Deptt., Khyber Teaching Hospital Peshawar for a period of six months 13/6/2018 to 13/12/2018 after permission from Ethical Committee. Sample size was 105 in each group. Consecutive non probability sampling technique was used.

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Inclusion Criteria: All children with first episode of acute Bronchiolitis with <48 hours duration with age 2-24 months and of both genders.
Exclusion Criteria: Infants born before 34 weeks of gestation, infants with previous history of wheezing and steroid use in the last 48 hours on history and progressive respiratory failure were excluded.
Data Collection Procedure: The study was conducted after approval from hospitals ethical and research board. Baseline RDAI score was calculated from all patients. Patients in group A were nebulized with epinephrine (0.1 ml/kg l-epinephrine in a concentration of 1.10000 every hour) while children in group B were subjected to salbutamol nebulization (5mg/ml solution) ½ml+3ml normal saline repeated every hour. All children were reassessed at the end of 4th dose and RDAI were recalculated for all cases. The collected data was analyzed in SPSS vr 22.

RESULTS

The detail of results is given in tables 1,2,3,4,5,6,7,8

Table 1: Age distribution

Age in months	Epinephrine(A) (n=105)		Salbutamol(B) (n=105)	
	n	%age	n	%age
2-12	66	63%	74	70%
13-24	39	37%	31	30%
Total	105	100%	105	100%
Mean+SD	10.57±4.22		11.63±3.14	

Student T Test= P value was 0.0402

Table 2: Gender distribution

Gender	Epinephrine (n=105)		Salbutamol (n=105)	
	n	%age	n	%age
Male	63	60%	56	53%
Female	42	40%	49	47%
Total	105	100%	105	100%

Chi square test= P value was 0.3296

Table 3: Mean RDAI Score at baseline

RDAI Score	Epinephrine (n=105)		Salbutamol (n=105)	
	Mean	SD	Mean	SD
	11.57	±2.21	11.3	±2.14

Student T Test= P value was 0.3695

Table 4: Mean RDAI Score At Follow Up

RDAI Score	Epinephrine (n=105)		Salbutamol (n=105)	
	Mean	SD	Mean	SD
	4.77	±2.19	5.43	±1.69

Student T Test= P value was 0.0153

Table 5: Mean RDAI Score With Age Upto 12 months

RDAI Score	Group-1 (n=66)		Group-2 (n=74)	
	Mean	SD	Mean	SD
	4.42	±2.09	5.81	±1.50

Student T Test= P value was 0.0001

Table 6: Mean RDAI Score With Age 13-24 months

RDAI Score	Group-1 (n=39)		Group-2 (n=31)	
	Mean	SD	Mean	SD
	5.36	±2.34	4.56	±1.88

Student T Test= P value was 0.1265

Table 7: Mean RDAI Score With Males

RDAI Score	Group-1 (n=63)		Group-2 (n=56)	
	Mean	SD	Mean	SD
	4.92	2.15	4.71	1.86

Student T Test= P value was 0.5722

Table 8: Mean RDAI Score With Females

RDAI Score	Group-1 (n=42)		Group-2 (n=49)	
	Mean	SD	Mean	SD
	4.67	2.28	6.06	1.29

Student T Test= P value was 0.0005

DISCUSSION

In our study, In age of 2-12 months, 63% infants have nebulization with epinephrine and 70% cases with salbutamol while in age group 13-18 months, 37% cases nebulized with epinephrine and 30% infants with salbutamol. Mean±SD was 10.57±4.22 and 11.63±3.14 months respectively. Regarding sex, 60% males were nebulized with epinephrine and 53.3% with salbutamol while 40% females were nebulized with epinephrine and 46.7% cases with salbutamol. Mean RDAI at baseline was calculated as 11.57+2.21 with epinephrine and 11.3+2.14 with salbutamol and P value was 0.3695. Mean RDAI after follow up was calculated as 4.77±2.19 in epinephrine and 5.43±1.69 in salbutamol and P value was 0.0153.

A study by Modaressi, et al[5] showed that using epinephrine over salbutamol could be more effective in the emergency management of the disease. In our study, patients RDAI score was improved more by using epinephrine than Salbutamol but it was non significant. Another analysis shows the effectiveness and superiority of adrenaline among outpatients, it reduces admissions on day one.[6] Menon K et al[7] in double-blind trial showed that 33% of the patients in epinephrine group were admitted to the hospital compared with 81% of the salbutamol group (p= 0.003). So nebulization with epinephrine is more effective than salbutamol for infants with acute bronchiolitis. A study carried out by Hartling et al [8] showed that short term treatment with epinephrine is preferred to salbutamol. In contrast, in some studies, the effectiveness of salbutamol and epinephrine was similar[9,10] which are in accordance with the present study.

CONCLUSION

Mean reduction in RDAI with nebulized epinephrine is more than nebulized salbutamol in children with acute bronchiolitis.

Conflict of interest: Nil

REFERENCES

1. Ahmad S, Aamir S, Ahmad S. Acute bronchiolitis in children. Professional Med J 2013;20(5): 707-712.
2. Iqbal SMJ, Afzal MF, Sultan M A. Acute Bronchiolitis: epidemiological and clinical Study. Ann King Edward Med Coll 2012;15:203-5.
3. Hasegawa K, Tsugawa Y, Brown DF et al. Trends in bronchiolitis hospitalizations in the United States, 2000–2009. Pediatrics 2013;132(1):28-36.
4. Qymar K, Skjerven HO, Mikalsen IB. Acute bronchiolitis in infants, a review. Scand J Trauma Resuscit Emerg Med 2014;22(1):23.
5. Duke T. Pneumonia and bronchiolitis in developing countries. Archives of disease in childhood. 2014;99(10):892-3.
6. Parikh K, Hall M, Teach SJ. Bronchiolitis management before and after the AAP guidelines. Pediatrics. 2014;133(1):e1-7.
7. Menon K, Sutcliffe T, Klassen TP. A randomized trial comparing the efficacy of epinephrine with salbutamol in the treatment of acute bronchiolitis. J Pediatr. 1995;126(6):1004-7.
8. Hartling L, Wiebe N, Russell K. Epinephrine for bronchiolitis. Cochrane Database Syst Rev. 2004;1(1):CD003123.
9. Ralston S, Hartenberger C, Anaya T. Randomized, placebo-controlled trial of albuterol and epinephrine at equipotent Beta-2 agonist doses in acute bronchiolitis. Pediatr Pulmonol. 2005;40(4):292–9.
10. Patel H, Platt RW, Pekeles GS. A randomized, controlled trial of the effectiveness of nebulized therapy with epinephrine compared with albuterol and saline in infants hospitalized for acute viral bronchiolitis. J Pediatr. 2002;141(6):818–24.