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Research Article

**CLINICAL IMPACTS OF AMBROXOL IN TREATMENT OF
THE PATIENTS SUFFERING FROM ASTHMATIC
BRONCHITIS**

1Dr Munir Ahmed, 2Dr Hafiz Naeem Ali, 3Dr Usama Ibrar

¹Rural Health Center Kot Samaba Rahim Yar Khan²Rural Health Center Pacca Larran³Basic Health Unit Murtazabaad, Rahim Yar Khan

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Abstract:

Objective: The purpose of this study is to examine the clinical impacts of ambroxol in treatment of the patients suffering from Asthmatic Bronchitis.

Methodology: Total 120 patients who were suffering from Asthmatic Bronchitis and got admission in Sheikh Zayed Hospital Rahim Yar Khan from March 2018 to November 2019, were the participants of this research work. We divided these patients into observation group and control group. There were 60 participants in each group. We performed the treatment of the patients of control group with the conventional method, whereas the treatment of observation group was carried out with ambroxol in addition with conventional method. The comparison was carried out for therapeutic impact, total duration of disappearance of the signs and symptoms and the pulmonary function's recovery between the patients of both groups.

Results: The rate of effectivity of observation group was 96.70% and this rate was 73.30% for patients of control group. Control influence of the patients of observation group was much better as compared to the patients of control group, describing a statistically significant difference ($P < 0.050$). Total duration of the disappearance of symptoms in the patients of observation group was less as compared to the patients of control group. Pulmonary function's function recovery was better in the patients of observation group as compared to the patients of control group ($P < 0.050$).

Conclusion: For the patients of Asthmatic Bronchitis, addition of the ambroxol to conventional method of treatment has the ability to improve the therapeutic impact, lessens the total duration of the disappearance of symptoms and signs and it also promotes the patient's recovery.

KEYWORDS: Conventional, Ambroxol, Asthmatic Bronchitis, Control Group, Observation Group, Pulmonary, Therapeutic.

Corresponding author:**Dr. Munir Ahmed,**

Rural Health Center Kot Samaba Rahim Yar Khan

QR code



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INTRODUCTION:

Asthmatic Bronchitis is a chronic inflammation of airway. Joint contribution of the T-lymphocyte, mastocyte and eosinophils is important in the pathogenesis of Asthmatic Bronchitis. Most important symptoms of Asthmatic Bronchitis are cough, dyspnea, asthma, wheezing of lungs and phlegm [1,2]. This is severe influence of this complication on the mental and physical health of the patients. So, there is requirement of early diagnosis and treatment. There is no certification of the etiology of Asthmatic Bronchitis. Some research works has advocated that it has relation with the factors of environment and heredity factors. If there is not timely treatment, it can involve into asthmatic bronchitis and the treatment difficulty will increase [3,4]. There is slow onset of the asthmatic bronchitis and prolonged course. Repeated attacks can aggravate the condition of disease, which may cause many complications like pneumonia, emphysema and pulmonary diseases of heart [5]. It is stated that the patients of asthmatic bronchitis often have abnormalities like allergy and eczema. It is vital to decrease the secretion of airway and expel the sputum to control the inflammation of airway and attain the goal of treatment of asthmatic bronchitis [6,7]. Recently, methods of treatment include inhalation of oxygen, relief from cough, relief from asthma, spasmolysis, and aerosol inhalation, etc., which has the ability to relax the smooth muscle of airway for the improvement of symptoms. The above-mentioned methods of treatment cannot achieve the goal of phlegm and solution of the problems of respiratory tract [8].

Ambroxol has the ability to reduce the secretion of serous as well as mucinous secretion. A foreign research work stated that there is significant impact of ambroxol in the prevention of bronchitis [9]. However, there are few studies on the use of ambroxol for the treatment of the asthmatic bronchitis; therefore, this research work recruited 120 patients suffering from asthmatic bronchitis who got admission from March 2018 to November 2019 to examine the impacts of ambroxol for the treatment of the asthmatic bronchitis.

MATERIAL AND METHODS:

In this study 120 patients suffering from asthmatic bronchitis who got admission in Sheikh Zayed Hospital Rahim Yar Khan from March 2018 to November 2019, were the participants of this research work. The division of the patients was carried out into two groups; observation group and Control Group in accordance with the method of random number table with 60 patients in each group. We diagnosed all the patients with Asthmatic Bronchitis by examining the pulmonary function. All the findings of this examination were

according to the international diagnostic standard of Asthmatic Bronchitis [10]. All the patients suffering from severe dysfunctions of kidneys and liver, serious endocrine complications, severe diseases of metabolism and past history of cancer diseases or drug allergy were not included in this research work. We informed all the patients as well as their families about the purpose of this research work and obtained written consent from them. Ethical committee of the hospital gave the permission to conduct this research work.

After the admission of the patients, they obtained conventional treatment of Asthmatic Bronchitis, i.e., including the treatment of symptoms like oxygen inhalation, relief from cough and relief from asthma and use of antibiotics. Additionally, with the mentioned treatment; we used ambroxol as adjuvant treatment in the patients of observation group. We injected this drug intravenously, 15.0 mg/time for adults, two times in a day morning and evening. In the duration of the treatment, the patients of both groups cooperated with the staff nurse. There were following specific measures; nurses took care of the patients, assessed their psychological and provided them comfort and encourage them to eliminate the inferiority as well as negative psychology, get free from thought burden, face the miseries of life correctly, increase confidence to face the complication and improve compliance to treatment. Along with the treatment in accordance with the advice of professionals, patients were provided with daily life nursing and education about health. We advised the patients to completely quit smoking and increase their physical exercises, eat diet with full of protein, restrict the use of seafood and sodium salt and avoid to make contact with dust, mold and pollen.

We assessed the impacts of treatment by examining the improvement in the clinical symptoms and recovery of the pulmonary function. If there was disappearance in the symptoms of this complication as pain in chest and cough after the treatment, there was recovery in normal temperature of body and results of the examination of the blood routine and pulmonary function were normal, then we declared the disease as cured. If there was remission in the clinical symptoms and temperature of body as well as other examinations, then we stated the treatment as effective. If there was no remission in all these parameters then treatment was declared as ineffective. We also measured and recorded the total duration of improvement of clinical symptoms. We also compared the pulmonary function's recovery between the patients of both groups before and after the application of the treatment. SPSS V.20 was in use for processing of the collected information. We expressed the measurement data in averages and standard deviations. We expressed

the numerical data in rates. P value of 0.050 was considered as significant.

RESULTS:

There were 20 males and 34 female patients in observation group with a range of age from 21 to 44 years, with an average age of 32.50 ± 11.50 years. The range of course of this disease was from 1 to 6 years with an average course of disease as 2.60 ± 1.70 years. In control group, there were 28 males and 32 female patients with a range of age from 23 to 42 years with an average age of 32.50 ± 9.50 years. The range of the course of disease was

from 1 to 5 years with an average course of disease as 2.40 ± 1.60 years. We found no significant difference in baseline information between the patients of both groups; so, the findings are comparable for both groups. Rate of effectivity of patients of observation group and control group was 96.70% and 73.30% respectively. The treatment impact of the patients of observation group was much better as compared to the patients of control group, and there was significant difference between the patients of both groups for the impacts of treatment ($P < 0.050$, Table-1).

Table-I: Clinical Efficacy Between the Two Groups [n (%)]

Group	Cured	Effective	Ineffective effective rate	Total
Observation	54(90)	4(6.7)	2(3.3)	58(96.7)
Control	group 33(55)	11(18.3)	16(26.7)	44(73.3)
X2	/	/	/	11.749
P	/	/	/	<0.05

Total duration of the disappearance of signs and symptoms in the patients of observation group was much low as compared to the patients of control group and this disparity was also much significant statistically ($P < 0.050$, Table-2).

Table-II: Disappearance Time of Symptoms and Signs Between the Two Groups

Group	Disappearance time of asthma	Disappearance time of wheezing	Disappearance time of cough	Disappearance time of rale
Observation	3.06 ± 0.82	3.12 ± 0.78	5.10 ± 2.85	2.12 ± 1.36
Control	5.46 ± 1.83	5.71 ± 1.62	7.82 ± 2.91	4.68 ± 1.59
t	8.357	10.185	4.701	8.618
P	<0.05	<0.05	<0.05	<0.05

There was improvement in the pulmonary function of the patients of both groups after the treatment as compared to the pulmonary function before the application of treatment. The degree of improvement in the patients of observation group was much better as compared to the patients of control group and there was significant difference statistically in the patients of both groups ($P < 0.050$, Table-3).

Table-III: Pulmonary Function Indexes Between the Two Groups Before and After Treatment

Group		FEV1 (L)	FEV1 /FVC (%)
Observation	Before Treatment	1.31 ± 0.36	34.57 ± 0.62
	After Treatment	2.47 ± 0.49	65.83 ± 1.27
Control	Before Treatment	1.28 ± 0.38	34.49 ± 0.58
	After Treatment	1.85 ± 0.42	54.66 ± 1.52

DISCUSSION:

Asthmatic Bronchitis is an inflammation of chronic airway, does not belong to asthma, but there is still association with asthma, as some patients of Asthmatic Bronchitis will develop asthma over period of time [11]. There are two main factors in the etiology of the asthmatic bronchitis. First one is genetic factor. Relevant research works have stated that there is association of the multi-locus genes with the allergic diseases, which performs much vital role in the development of asthma pathogenesis [12]. Second are the factors of environment as smoke, gasoline, paint, dust, cold air and irritating odors can produce stimulation in the bronchial mucosa and it can lead to cough and excitation of the vagal nerve [13]. There are facts that the degree of the damage of pulmonary function was rapidly aggravated with the extension of asthmatic bronchitis's course [14]. Without fast and effectual therapies in health care centers, patients will suffer from the cardiopulmonary failure, which will extremely jeopardize the quality of life of the patients. Ambroxol is new expectorant type, which has the ability to regulate the viscosity of mucus, dilute mucus, and clean-up oxygen free radicals. It promotes the surfactant synthesis in the alveoli, supports the movement of cilia, promotes the function of clearance by system of mucus transport and it expels the sputum for the improvement of the ventilation functions of the respiratory tract of these patients and it also enables the patients to recover very rapidly [15,16].

Ambroxol restricts the discharge of the inflammatory transmitters like mast cells, to prevent the functions of lungs and damage. It also relieves the patients from cough [17]. There is better absorption of the ambroxol if being injected intravenously than being administered orally and bioavailability of ambroxol is up to ninety percent. It also has the traits of long-lasting pharmacy dynamics. After metabolism of liver, there can be formation of inactive dibromo-o-aminobenzoic acid, which is metabolized 80.0% through kidney prototype [18]. Application of the ambroxol among the patients suffering from Asthmatic Bronchitis is much effective in improving the sputum dissolution and increase in the concentration of blood. In this current research work, we used ambroxol for the treatment of the patients suffering from asthmatic bronchitis. The findings displayed that rate of effectivity 96.70% in the patients of observation group and 73.30% in the patients of control group and this very difference was significant statistically ($P < 0.050$). Overall impact of the patients of observation group was better which is much comparable with the findings of the research work conducted in past [19,20].

Zhang discovered that the usage of ambroxol in combination with other antibiotics can rise the

penetration of antibiotics to the tissues of lung and increase the bactericidal capability of the antibiotics [21]. This research work states that ambroxol is much effectual as compared to conventional method of treatment for the treatment of Asthmatic Bronchitis. It also improves the signs and symptoms as well as recovery of the pulmonary function, which is consistent with the findings of Li [22]. The evidences showed that there is effective role of ambroxol in the treatment of asthmatic bronchitis as it reduced the symptoms of disease as well as control the course of disease effectively.

CONCLUSION:

There are better clinical impacts of ambroxol in the treatment of Asthmatic Bronchitis and this application can improve the signs and symptoms as cough and asthma, control the condition of the patients, improves the treatment quality, and promotes the patient's recovery.

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