



## Montelukast effectiveness and tolerability in mild to Moderate persistent asthma

Mohammad Fadhil Mohammed Al-Etby, M.B.Ch.B.DM

Baladrus Hospital Centre

Falah A. Deli, M.B.Ch.B, F.I.C.M.S

Assist. Prof, Dep. of Medicine, Alsader Teaching Hospital

### Abstract

**Introduction:** Asthma is a syndrome characterized by air flow obstruction that varies markedly spontaneously and with treatment, adding singulair treatment to handle symptoms in mild to moderate asthma may help improving symptoms in some patients.

**Patients & method:** Singulair was prescribed for 4 weeks to treat 30 adult patients, aged 15-60 years with mild to moderate persistent asthma

**Results:** After 4 weeks of singulair treatment good results were obtained with much improvement of nocturnal waking, early morning waking and exercise tolerance as well as PFT.

**Conclusion:** The drug is effective and well tolerated by asthmatic patients.

**Keywords:** Asthma, singulair treatment, PFT.

### Introduction

Asthma is a syndrome characterized by airflow obstruction that varies markedly, both spontaneously and with treatment. Asthmatics harbor a special type of inflammation in the airways that makes them more responsive than non asthmatics to a wide range of triggers leading to excessive narrowing with consequent reduced airflow and symptomatic.

Wheezing and dyspnea. Narrowing of the airways is usually reversible, but in some patients with chronic asthma there may be an element of irreversible airflow obstruction. The increasing global prevalence of asthma, the large burden it now imposes on patients, and the high health care costs have led to extensive research into its mechanisms and treatment (1,2)

Montelukast is a leukotriene receptor inhibitor. Leukotriene's are chemicals body releases on breathing in an allergen (such as pollen). These chemicals cause swelling in lungs and tightening of the muscles around airways, which can result in asthma symptoms (3).

Montelukast is used to prevent asthma attacks in adults and children as young as 12 months old. It is also used to relieve runny nose and sneezing caused by allergies in adults and children as young as 6 months old.

Montelukast is also used to prevent exercise-induced bronchoconstriction (narrowing of the air passages in the lungs) in people who are not already taking this medicine for other conditions<sup>(6)</sup>.

Adding montelukast Treatment to handle symptoms in Mild to moderate Asthmatics (ASTHMA) survey is a large-scale survey conducted in GP-treated patients with mild-to-moderate persistent asthma, uncontrolled by inhaled corticosteroids (ICS) therapy, or with exercise-induced asthma<sup>(8)</sup>. It assessed the level of symptoms experienced by these patients despite their current medication and determined the efficacy of montelukast (Singulair, MSD), a leukotriene receptor antagonist (LTRA) administered orally once daily, in alleviating these symptoms in real-life conditions. Patient-relevant outcomes, such as limitation of activities, were incorporated in asthma management assessment. Patient general satisfaction was evaluated through their willingness to pursue the treatment<sup>(4, 5)</sup>.

## Patients and Methods

Fifty patients involved in our research, 20 of them are lost in the follow-up, five of them are unable to buy the drug and 15 do not communicate with us and 30 patients were completed the assessment in this research, the age was 15-60 years old, 13 males and 17 females.

Patients involved were mild and moderate asthmatic they didn't have other medical disease and hadn't a complicated illness.

Computerized Spiro metric test using Spiro lab 11<sup>R</sup> was done before montelukast in the first visit of patient and repeated after at least 4 weeks of montelukast treatment at single dose of 10 mg /day at night. Montelukast used as add on therapy in this research. Therefore the patients remained on their own treatment.

We depend on pulmonary function values and symptomatic improvement to adjust response to drug. Then we subdivided the patients into 3 groups according to the age to see which group responds better. Group1 (<30years), Group2 (30\_50years), Group3 (>50years).

## Statistical analyses

Difference in symptoms between the pre & post study period were analyzed by chi - square test for independence. The degree of statistical significance was expressed as p value, which was considered significant if  $\leq 0.05$ <sup>(5,10)</sup>.

## Results

Thirty patients enrolled in montelukast add on therapy for mild to moderate persistent asthma.

Most of patients presented with cough, wheeze and shortness of breath. 75% of patients had nocturnal wakening, 68% had early morning wakening and 80% had exercise intolerance.

After 4 weeks of montelukast treatment, there was a significant improvement in asthma symptoms.

Nocturnal wakening was improved by 76% from beginning of treatment, much better improvement in exercise tolerance 83.3% and 80% in early morning wakening as shown in figures 1, 2 & 3.

Also there was a significant improvement in Spiro metric values, and as shown from the result of PFT before and after singulair treatment (table 1). We see the response to treatment was better in groups 1&2 than group 3 as shown in (table 2).

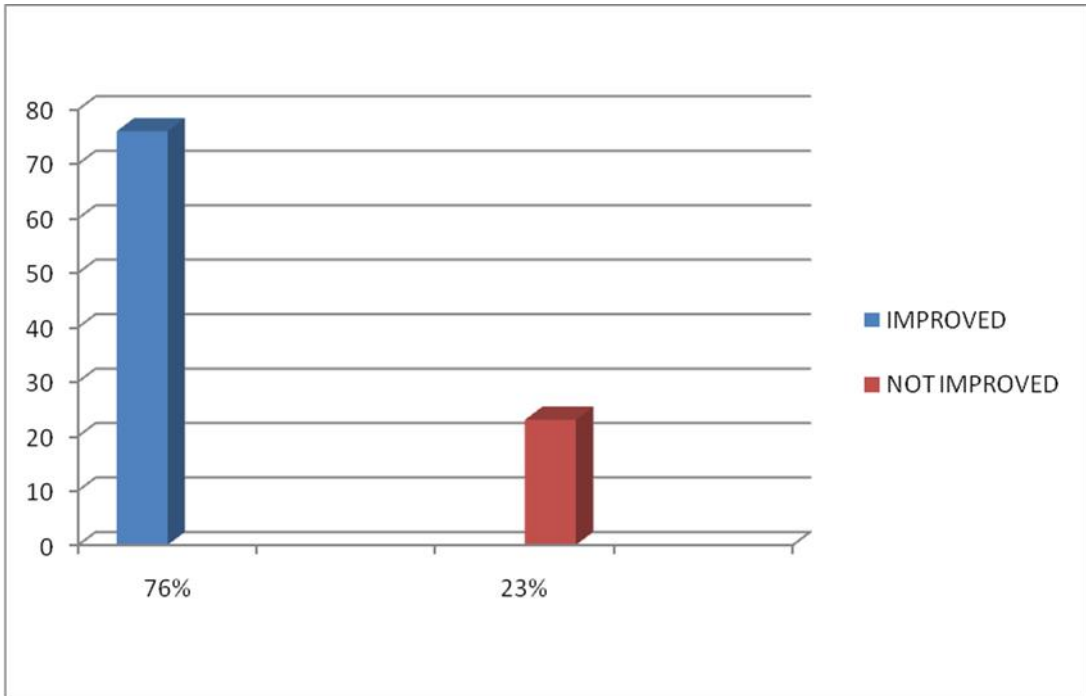


Figure 1: Improvement in nocturnal waking after montelukast treatment

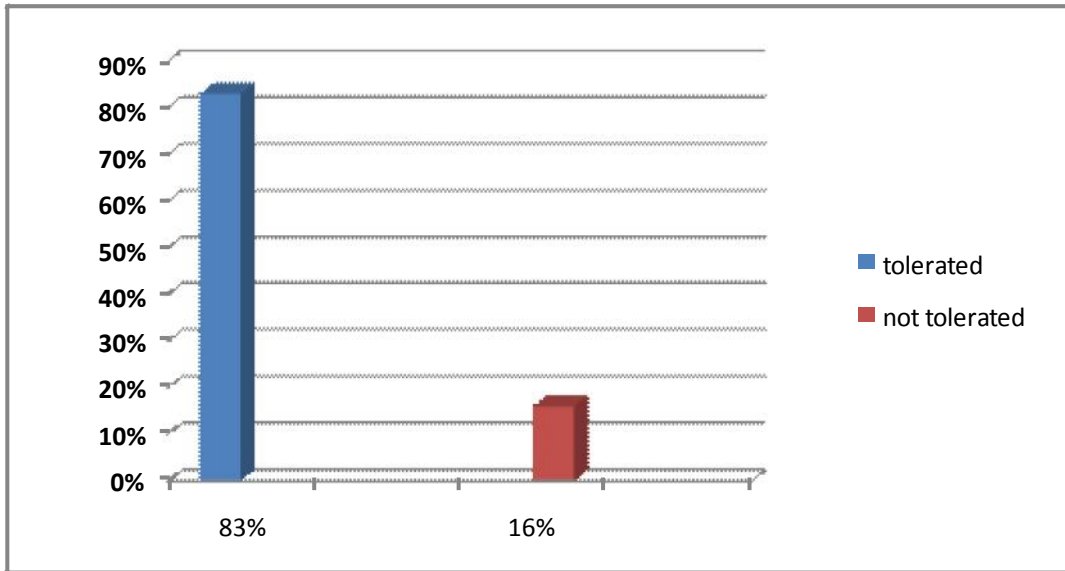


Figure 2: Exercise tolerance after montelukast treatment

Table 1 .Pulmonary function test before and after montelukast treatment and p value for 30 asthmatic patients.

No.	Age/Sex	FEV1 B	FEV1 A	FVC B	FVC A	PEF B	PEF A
1	53/f	1.47	2.70	1.57	2.21	4.11	4.80
2	70/m	1.00	1.32	1.32	2.92	2.72	3.98
3	30/f	2.25	2.28	2.83	2.76	3.44	3.50
4	50/m	1.72	1.89	4.10	3.34	4.30	4.41
5	15/f	1.28	2.8	1.38	1.33	2.50	2.70
6	19/f	1.72	2.75	2.30	3.31	3.20	3.75
7	55/f	1.32	2.8	1.67	1.73	4.25	4.80
8	15/m	1.29	1.34	1.39	1.33	2.62	2.63
9	28/f	2.40	2.39	2.70	2.55	3.10	3.05
10	56/f	1.36	2.06	2.29	2.32	3.14	3.40
11	18/f	2.40	2.43	2.70	2.62	4.74	4.70
12	30/m	1.60	2.78	1.62	2.82	5.40	6.00
13	54/f	1.64	2.20	1.80	2.00	3.58	4.50
14	16/m	1.18	1.18	1.58	1.42	4.30	4.20
15	25/m	2.10	2.57	3.00	3/27	5.50	6.20
16	32/m	3.30	3.82	3.69	3.70	4.11	4.80
17	48/f	2.04	2.8	2.35	2.28	3.15	3.20
18	59/f	.71	1.00	1.58	1.15	4.30	4.15
19	54/f	1.44	1.95	2.01	2.02	4.70	5.00
20	58/f	1.88	1.87	1.88	1.15	4.60	4.40
21	15/f	2.03	2.24	2.24	2.38	3.80	4.56
22	77/m	.68	3.42	1.22	3.42	4.70	5.20
23	29/m	3.49	3.75	3.56	4.46	4.30	4.50
24	65/m	1.01	1.00	1.33	1.33	3.40	3.10
25	50/f	.59	.58	1.87	1.80	4.10	3.80
26	50/f	1.22	1.44	1.97	1.52	2.67	3.75
27	15/m	1.61	2.25	1.61	2.28	4.11	4.24
28	15/m	1.85	2.04	3.52	2.84	2.84	3.79
29	34/f	2.00	2.30	2.35	2.36	3.10	5.20
30	56/m	1.99	2.80	2.96	3.24	3.48	4.69
mean		1.7	2.3	2.2	2.4	3.80	4.11
P value		FEV1 0.05		FVC 0.03		PEF 0.0002	

Table 2 :The effectiveness and p values for 3 groups of patients according to ag age.

Groups	FEV1 P Value	FVC P Value	PEF P Value	Effectiveness
Group1 <30Y	0.05	0.02	0.0001	72%
Group2 30_50Y	0.06	0.01	0.0001	87%
Group3 >50Y	0.1	0.08	0.0001	72%

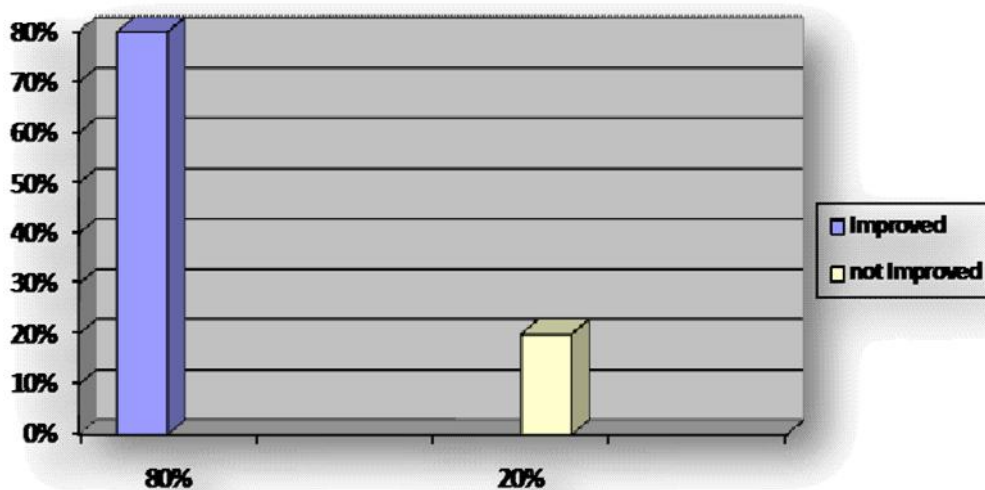


Figure 3: Improvement in early morning wakening after montelukast treatment

## Discussion

After 4 weeks of montelukast treatment and in some cases we extended it 5 or 6 weeks, according to patient's cooperation with this thesis we have obtained good response rate either for symptomatic or pulmonary function test.

In respect to nocturnal wakening which disrupt the patients sleep, there was marked improvement in night sleep and breathing pattern.

There is good improvement in early morning wakening and better improvement in exercise tolerance, patients noticed that they are able to go upstairs with less effort or shortness of breath, young boys can enjoy their friends in daily activities.

There is marked decrease in hospital admission to emergency department in treated patients, only four patients did not respond to singulair treatment and represent 11%.

The response to treatment was better patients of <30years than those >50years, so the response rate is better in younger ages group as shown in table 2.

After 4 weeks of montelukast treatment we did not notice any side effect of the drug and the patients tolerated the drug very well.

The final percentage for the all 30 patients treated by muntelukast is 76.6%.

The results were obtained in this thesis similar to results shown in (India Journal Pediatric , 2006) and

(from Current Medical Research and Opinion 2003 ) , the montelukast related churg Strauss syndrome is reported in this researches but not in our thesis and attributed this to reduced steroid dose and exacerbation of present chug Strauss syndrome <sup>(5)</sup> .

## Conclusion

Montelukast is effective and save drug to be tried in every asthmatic patient.

## References

- 1- Fauci. Brawn Wald. Kaspé. Hauser, Harrison's principle of internal medicine. longo. Jameson. Loscal.2008 17<sup>th</sup> Edition, P 248.
- 2-GOLDMAN: CECIL MEDICINE, 23RD ED. 2007, P 87.
- 3- Nicholas A. Boon. Nicky R. Walker Davidson principle & practice of medicine...2006 20th Edition, p 670.
- 4-Leff JA et al montelukast, leukotriene-receptor antagonist, for the treatment of mild asthma and exercise-induced bronchoconstriction. N Engle J Med 1998; 147\_52.
- 5-Edd man JM, et al. Oral montelukast compared with inhaled salmeterol to prevent exercise induced bronchoconstriction. Ann Intern Med. 2000; 132- 97-104.
- 6-singulair inform. From, Drugs. Com. 2009.

7-Robinson DS al. Addition of leukotriene antagonist to therapy in chronic persistent asthma: a randomized double blind placebo –controlled trail. *Lancet* 2001; 357: 2007- 11

8- Bateman ED, Boushey HA, Bousquet J, et al: Can guideline-defined asthma control be achieved? The Gaining Optimal Asthma Control study. *Am J Respir Crit Care Med* 2004; 170:836-844.

9- Silverman RA, Nowak RM, Korenblat PE, et al: Zafirlukast treatment for acute asthma—evaluation in a randomized, double-blind, multicenter trial. *Chest* 2004; 126:1480-1489.

10- Szeffler SJ, Phillips BR, Martinez FD, et al: Characterization of within-subject responses to fluticasone and montelukast in childhood asthma. *J Allergy Clin Immunol* 2005; 115:233-242.

## ( ) **علاجة إمراض الربو المزمنة وقابلية تكيف المرضى مع العلاج montelukast** ( )

يضم هذا البحث فحص 30 مريضاً ببدء الربو المزمن من عمر 15 60 سنة على إن يكونوا مستمرين في علاجهم السابق ضد الربو وإضافة ( ) إلى علاجهم وفحص كفاءة الدواء خلال أربع أسابيع من بدء العلاج لهم. **montelukast** يتم فحص الاستجابة إلى العلاج عن طريق جهاز فحص وظائف الرئة وكذلك عن طريق التحسن الملحوظ على حالة المرضى.

### **النتائج**

( 10ملغ ليلا فقط ,هنالك تحسن ملحوظ في حالة المرضى بصورة عامة من خلال عدم **montelukast** بعد مرور أربع أسابيع من بدء العلاج مع ( الاستيقاظ المتكرر إثناء الليل أو الصباح الباكر وكذلك قدرتهم على ممارسة أعمالهم اليومية دون اللجوء إلى التبخير أو البخاخ البيدوي . **pulmonary function test**. ( كذلك هنالك تحسن ملحوظ في وظائف الرئة (

### **المناقشة**

بعد مطابقة النتائج في هذا البحث مع مثيلاتها من البحوث في بقية البلدان هنالك تقارب كبير في النتائج مع فارق بسيط إلا وهو إن في هذا البحث ليس هنالك أي تأثير جانبي مسجل خلال طول مدة البحث, لكن في بقية البحوث هنالك تأثير جانبي مسجل مثلا ( , (... أو ازدياد ) **charg Strauss syndrome**. (

### **الاستنتاج**

الدواء فعال وباستطاعة مرضى الربو التكيف والاستمرار بالعلاج لفترة أطول .

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