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PEFR A Valuable Index For Categorising Cal

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Abstract:

PEFR determination for assessment of ventilatory function in chronic air flow limitation has been widely practiced since 1959 because of its easy measurement, accuracy and reproducibility (Makerrow1958), In the present study PEFR readings in patients with acute severe asthma were determined to evaluate the rate of recovery from episodic attack.

Two groups of patients were identified with PEFR measurement.

One group of patients with quick and complete recovery from asthmatic episode, described as "ACCELERATED RESPONDERS" and in the other group the recovery was slow and incomplete and were referred to as "SLOW RESPONDERS"

In spite of availability of powerful drugs for management, the factors affecting the natural history of attack and the response to treatment are still poorly understood. Recording of PEFR three to four times a day in patients with acute attack of asthma help us to predict confidently which patients will recover rapidly and which will not, and whose recovery will be slow and incomplete. The value of recording PEFR using the very handy robust instrument yielding valuable, and reliable informations for treatment and evaluation are discussed here.

1.Materials And Methods

A major group of 35 patients with obstructive airway disease with frequent episode of exacerbation of symptoms who were attending the chest and allergy asthma clinic were in included in the study. PEFR measurements were made for all the patients using Wright Peak Flow Meter (Wright1959). Measurements were taken with the subject sitting upright and care was taken to ensure that the instrument was kept horizontal and none of the venting slots were obscured. Peak flow Rate was measured four times a day ie 8am,12pm,2pm and 6pm in standard fashion for all patients. Results were obtained from the best of three maneuvers.

Recovery from attack was assessed by improvement in peak flow rate.

Most of the patients included in the present study received oral or intravenous steroids in high doses and inhaled and intravenous bronchodilators in a standard fashion. Some of them who were considered to be not so ill received oral steroids therapy and inhaled bronchodilators only. When the acute phase had passed parenteral treatment was slowly discontinued and then withdrawn at varying intervals for each patient.

2.Results And Observation

All patients improved as a result of treatment. None died and none required artificial ventilation. From two distinct pattern of recovery in terms of increase in PEFR led to the division of patients into 2 groups.

Group 1—Accelarated Responders—among the total number of 37 patients selected for study 22 patients belonged to this group. 4 out of 22 achieved 50% of predicted PEFR within 30 hours and 9 out of 22 within 40- 48 hrs. The rest of the seven patients showed improvement in PEFR in 60-72hrs.The diurnal fluctuation in PEFR readings were significant. The diurnal fall of PEFR measurements associated with the morning and/ or evening exacerbation of symptoms

(described as morning dip and /or evening dip) a prominent feature in group1 ie there was fall in PEFR reading at 8am and fall in PEFR level at 6pm associated with the rise in PEFR in the afternoon(2pm) the difference in PEFR reading between 8 am and 2pm was >9%. The difference was statistically significant($p<o.05$) ($r=o.75$).

Most of the patients in this group were youngsters, suffering atopic asthma, and their atopy has been revealed from their personal history. These patients were successfully treated by oral steroids and inhaled BD alone. The duration of treatment was one week

(ie 4-11 days). PEFR at the time of discharge was almost equal to the predicted value.(table 1)

Group 11: SLOW RESPONDERS – the rest of patients among the total number of 37 were categorized as slow responders. Patients in this group were older, more ill, either chronic smokers or ex smokers suffering from chronic bronchitis with or without associated emphysematous changes and/ or with fungal infections. Patients had a significant low PEFR (<60 lit/min) at the time of hospitalization and PEFR was only 60.4% of the predicted value at the time of discharge. The diurnal fluctuation in PEFR value ranged between 1-3%which was not significant (table 2).

The mean difference in PEFR between first and second group reached statistical difference ($p<0.01$) in the second day of treatment as the RESPONDER GROUP showed good improvement in PEFR (table 3).

In group 1 among 22, two patients showed very low (ie <60lit/min) PEFR on admission with morning dip in PEFR(8am).The rate of recovery was slower than the rest of the patients of this group due to coryzal illness and purulent bronchitis but by the 4^{th} day of their treatment they could show improvement in PEFR like other patient of this Responder Group.

3.Discussion

The term acute severe asthma have been interpreted differently by different authors. (Tai,1967:Herxhemer1976). Very little is known about the physiology of asthma and there is considerable diversity of opinion about its treatment (Amer. Thor. Soci. 1968). Hospital admission, O2 and corticosteroids are essentials (Cooks1979) but the efficacy of treatment and even mortality remain open to argument.(Szczekik1977) and PEFR reading helps to determine to certain extent the pattern of asthma for treatment(Smith 1981).

4.Summary

No individual could be assigned with confidence to either recovery group at the time of admission. Assessment of PEFR four times a day to establish the full extent of potential variation in airway obstruction is helpful for categorization of the patients and determining the nature of further treatment.

5.Acknowledgement

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ETIOLOGY	MALE	FEMALE
ATOPIC ASTHMA PROVED TO BLACK GRAM, TOMATO, COLD, INCENSE	3	1
UPPER RESPIRATORY INFECTION	3	2
EXERCISE INDUCED ASTHMA	3	0
POLLEN INDUCED (GARDENER)	0	1
DUST INDUCED	6	2
EXPOSURE TO COW SHED	0	1

Table 1: Constitution Of Study Population In Group-1
Total No Of Subjects 22

ETIOLOGY	MALE	FEMALE
CHRONIC BRONCHITIS (SMOKERS)	3	1
BRONCHOPULMONARY ASPERGILLOSIS	0	1
CHRONIC BRONCHITIS WITH EMPHYSEMA	2	0
BRONCHIECTASIS	2	1
ASTHMATIC BRONCHITIS (COTTON MILL WEAVER)	2	1
EMPYSEMA	1	0
CORPULMONALE	1	0

Table 2: Constitution Of Study Population In Group—11
Total No Of Subjects—15

INDICES	GROUP-1	GROUP-11
AGE	22.4	51
RANGE	15-40	47-60
DURATION OF RECOVERY	7 DAYS	21 DAYS
RANGE	4-11DAYS	16-26DAYS
PEFR. PRE TREATMENT	125LIT/MT	80LIT/MT
RANGE. LIT/MT	100-205	60-120
PEFR. POST TREATMENT	380 LIT/MT	200 LIT/MT
RANGE LIT/MT	350-430	160-320
DIFFERENCE	P<0.01	

Table 3: Clinical Features In Both Groups

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