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Short communications

A single dose desensitization for summer hay fever

Results of a double blind study – 1988

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Summary. A new type of desensitising vaccine, enzyme potentiated was subjected to a double-blind randomised study during the hay fever season. The vaccine is a convenient single injection given in March and the results show good protection throughout the grass pollen season.

Key words: desensitization, summer hay fever, single injection, enzyme potentiated desensitization

Desensitization for summer hay fever has been a popular and effective treatment since the first descriptions of the procedure by Noon and Freeman in 1911 [1, 2]. Numerous controlled trials have shown safety and efficacy in patients with grass pollen [3, 4] and house dust mite allergy [5, 6, 7] although deaths from this form of immunotherapy have been reported [8, 9]. These potential dangers from desensitizing injections prompted the recommendations by the Committee of Safety of medicines UK [10] that firstly; injections should only be given where full resuscitation apparatus is available and secondly, the patient should wait 2 h after each injection in case of a systemic anaphylactic response. These recommendations effectively stopped desensitization for allergic conditions in the UK, as few patients were willing to face such a wait and few doctors were willing to give the injections. Since that time, desensitizing injections and skin testing solutions have been taken off the market in the UK, to the detriment of the patient although they are still prescribed as frequently as before in Europe.

In a busy allergy clinic the loss of this treatment caused many patients distress and for large numbers of patients, alternative treatments were not as effective.

It was against this background that an alternative desensitizing method was sought and enzyme potentiated desensitization (EPD) looked promising. In model systems in animals it was effective [11–13], and preliminary trials in man showed efficacy also [14], and the method only required a single injection. Thus we undertook a randomised double blind placebo controlled trial of EPD in well studied patients with summer hay fever due to grass pollen to assess its clinical efficacy.

Material, methods and subjects studied

Patients

Forty four patients, mean age 33 years (31 male) were enrolled in to the trial having positive skin tests, nasal examination and nasal challenge with grass pollen extracts.

The nature of the double blind study was explained and the fact that free use of Beclomethasone spray and Terfenadine would be available throughout the hay fever season.

Clinical assessment

Three factors were used to assess clinical response:
1. Diary cards for 6 weeks starting before the pollen season.
2. Drug usage by weighing Beclomethasone inhalers and counting antihistamine tablets.
3. Patients preference for treatment compared with previous years.

Treatment – enzyme potentiated desensitization EPD

Patients were given a single injection of active EPD or placebo randomly assigned, given weighed Beclomethasone spray, 100 Terfenadine tablets, diary cards and an instruction sheet.

The intradermal injection of the vaccine (0.125 ml) contains 100 Fishman Units of beta glucuronidase and grass pollen allergen derived from two sources: 2.5 Noon units of a conventional grass pollen extract (Wright Fleming method) plus 0.05 biological units of purified mixed grass pollen allergens (Pharmacia). The beta glucuronidase is of molluscan origin (Serivac), further purified by column chromatography. The dose of 100 Fishman Units is contained in less than 40 μg of protein.

The volume of fluid introduced into the dermis by a standard prick test is 3 μl [16]. Conventional prick testing solutions (100,000 Noon Units per ml or the equivalent) therefore introduce into the dermis quantities of allergen which are approximately the same as the dose given by a single intradermal injection of EPD.

Pollen counts were recorded locally throughout the season on a daily basis.

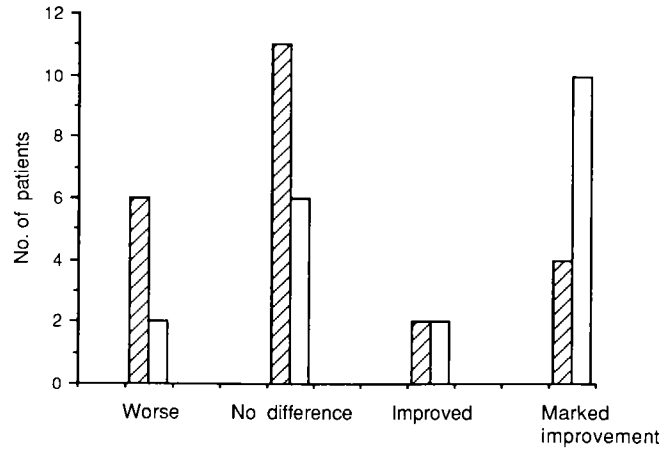

Fig. 1. The patients stated their preference for the 1988 treatment compared with treatment (antihistamine, topical steroids) given in 1987. There is a clear preference for the active treatment (Chisquared 13.8; $p < 0.01$). Placebo: hatched columns; active: plain columns

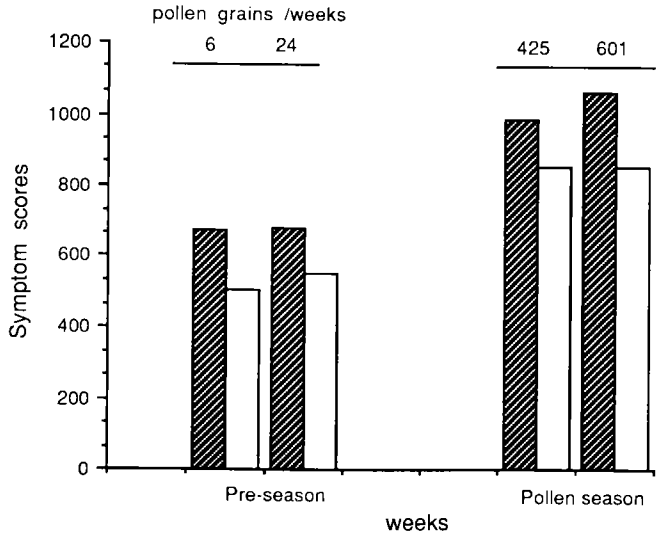

Fig. 2. There was no significant difference in the global symptom scores between the placebo and actively treated groups of patients. Placebo: hatched columns; active: plain columns

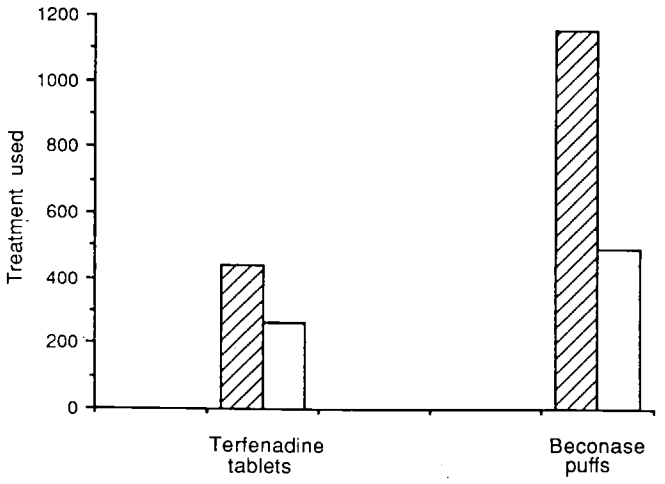

Fig. 3. When drug consumption is assessed, there is a clear reduction in the active compared with placebo treated group (Terfenadine $p < 0.05$; Beconase $p < 0.02$). Placebo: hatched columns; active: plain columns

At the end of the six weeks patients returned for assessment, had their diary cards checked, Beclomethasone sprays weighed and the tablets counted. They were then asked to assess whether their symptoms were worse, no different, slightly better or very much better than the previous year.

Results

The results of this study are encouraging in that the preference data shows a clear cut statistical result. The patients preferred the year 1988 after EPD to the previous treatment in 1987 (Fig. 1). The pollen count as can be seen from the global symptom scores was sufficient to produce symptoms (Fig. 2). The results from the diary card analyses showed no statistical differences between the treatment groups (Fig. 2). Finally, the use of anti-histamine and Beclomethasone was greatly reduced in the treatment group (Terfenadine $p > 0.05$; Beclomethasone $p < 0.02$) (Fig. 3).

Discussion

We have shown that the EPD when assessed in a double blind placebo controlled trial is an effective treatment for summer hay fever after only one injection given pre-seasonally. With regard to drug consumption and patients preference for treatment there is a clear result in favour of the active treatment. However, diary card analysis showed no difference between the two treatment groups. One reason for this is that almost 50% of the patients had high symptom scores before the grass pollen season. This was probably due to other airborne allergens that were seen on the slides, for example Hawthorn, Cladosporium and Oil Seed Rape. The treatment was convenient in that only one injection was given and was well tolerated with only local reactions which cleared in 48 hours. No systemic reactions were seen.

A recent study found that alum absorbed grass pollen vaccines (not of high potency) were as effective as topical sodium cromo-glycate [19], although interestingly, the only patients to become free of symptoms were those in the vaccine group. As a result of EPD, some patients needed no additional drug therapy to control their symptoms whilst others in the actively treated group used less corticosteroid aerosol and antihistamines.

We feel that EPD is safe and has a place in the treatment of IgE mediated inhalant problems. Clearly, an understanding of the mechanisms of action would allow refinements to be made and perhaps an even more effective vaccine would result.

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