

HIGH AND LOW DOSAGE POLLEN EXTRACT TREATMENT IN SUMMER HAY FEVER AND ASTHMA

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Vaughan (1948) states that the higher the dose reached in pollen hyposensitisation, the better the results obtained. Waldbott (1951) thinks that too intensive treatment which causes doses to be given in excess of the patient's tolerance, is the most frequent reason for unsuccessful results. Nearly all of the so-called high dosage schemes of America, do not reach the high level recommended by Freeman (1950). Some patients cannot reach a high dose without developing reactions to injections, others without any difficulty can reach a high dosage. As skin tests are not a quantitative measure of sensitivity at the start of treatment, it is impossible to know whether the patient is "highly sensitive" or not. The response to each injection is the only guide.

When comparing the results of hay fever treatment using different grass pollen extracts (Frankland 1955), it was found that there was no significant difference in overall result, whether the patient reached a dose of 18,000 units (Noon) as compared with 100,000 units, the dose that had been used in the clinic for a number of years by Freeman. The 18,000 units dose will be referred to as the high dose in the present trial. A low dosage *co-seasonal* treatment has also been shown to give reasonably good results in hay asthma and hay fever sufferers with the use of an appropriate anti-histamine (unpublished work). If, however, a low dosage pre-seasonal

scheme as recommended by Hansel (1945) can give comparable results in seasonal pollinosis as a high dosage scheme using many injections, low dosage would be the method of choice of treatment. Therefore in 1954 a trial was carried out to compare the results in seasonal hay fever treatment using high dosage (18,000 units) and a low dosage (100 units) scheme. In general the trial was similar to the trials on hay fever patients carried out in previous years and already described (Frankland and Gorrill 1953, Frankland and Augustin 1954). There was one difference in the trial to be described as compared with all previous ones, in that when the patients were reviewed at the end of the season, it was known whether the patient had received a small or large number of injections. Therefore the trial might not be quite free from bias.

SCHEME OF TRIAL

Patients who were placed in the trial, were those who had a seasonal hay fever with or without an associated seasonal asthma, who had never received injection treatment for hay fever previously. Randomisation was obtained by taking the same number of patients for treatment each week during January and February. The patients on the low dosage were asked to begin with a dose of 10 units and increase by this amount to 100 units as a maximal dose, the injections to be given weekly. In those patients whose treatment had been started more than 10 weeks before mid-May, a weekly maintenance dose of 50 units was given up to mid-May. The patients on the normal course of pre-seasonal high dosage pollen extract were asked to take the last dose by mid-May. Although not all patients finished the complete course of 44 injections, for the purpose of the experiment if more than 20 injections were given, the patient was considered to have had a reasonably high as opposed to low dose. A mixture of timothy and cocksfoot pollen ("Pollaccine") was used as the form of treatment. As in previous trials each patient kept a daily record chart of the hay fever symptoms. Eighty-six

TABLE I

Composition of the two groups on Low and High dosage.

Treatment		Low	High
Sex ratio	Male	50	54
	Female	35	31
Age of patient	Years		
	0-9	20	22
	10-19	37	37
	20-29	24	19
	30-39	4	5
	40-49	0	1
	50+	0	1
Age of onset	0-9	20	22
	10-19	37	36
	20-29	24	20
	30-39	4	5
	40+	0	2
Follow up	Attended interview	75	71
	Replied by letter	2	6
	Defaulted	7	7

patients were put into each group and as it happened, 75 were adequately followed up in each group. Table I shows that in respect of age, age at onset of symptoms, sex and follow up, the two groups were comparable.

RESULTS

The result of treatment on the *hay fever* in the two groups is shown in Table II. It will be seen that out of 75 patients on the low dosage, 12 had a good result and 42 had a poor result. On the high dosage scheme 73 patients were followed up compared with 75 on the low dosage. Forty seven had a good result and 5 had a poor result, while in each group 21 had a moderate result. Four patients in the low dosage scheme stated that they had the worst summer known and 3 of them had asthma during the summer for the first time. It is not

TABLE II
Results of Treatment of Hay Fever using Low and Higher dosage.

	Low Dosage	High Dosage
Good	12	47
Moderate	21	21
Poor	42	5
Unknown	2	4

Four patients on the low dosage stated it was the worst year known for hay fever and three developed asthma for the first time during the summer.

therefore very surprising that only 4 out of 23 who in previous summers had had asthma, stated that they had a good result on the low dosage scheme. Ten said the results were poor and 3 of these the worst summer they had known. This compares with 17 out of 24 hay asthma patients on the high dosage who had a good result and only 3 had a poor result. The results of the treatment on the hay asthma is summarised in Table III. The difference in the two groups comparing high and low dosage both for the hay fever ($X^2 = 17.7$ $P > 0.01$) and the hay asthma ($X^2 = 10.23$ $P > 0.01$) is highly significant.

TABLE III
Results of Treatment of Hay Asthma using Low and High dosage.

	Low Dosage	High Dosage
Good	4	17
Moderate	9	4
Poor	10	3
Unknown	1	5

Three patients on the low dosage stated it was the worst year known for asthma.

DISCUSSION

Many patients are seen each year who have a summer hay fever which is refractory to all symptomatic drugs. They also state that previous injection treatment has failed. Questioning reveals, however, that the patient has only received a few

injections of a weak pollen solution. In other cases a stronger pollen solution has been used, but severe local or general reactions occurred early during the course, so that injections were discontinued. The pollen sensitive patient during the first course of injection therapy, must begin with a very low dose. The increase in dosage must also be small. This means that to reach a high dosage a large number of injections is necessary. The trial just described shows that in hyposensitisation in pollinosis, pre-seasonal high dosage gives the best results.

SUMMARY

In patients with a seasonal pollinosis, a controlled trial was carried out to compare results using pre-seasonal high and low dosage. Under the conditions of the experiment, it was found that a high dosage pollen extract gave significantly better results in treatment both to hay fever and to hay asthma, than did a low dosage scheme.

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