

PHYSICAL EXERCISE DOES NOT FAVOUR ADVERSE REACTIONS TO ALLERGEN IMMUNOTHERAPY BY THE SUBLINGUAL ROUTE

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SUMMARY: It is generally recommended in consensus documents on allergen immunotherapy to avoid any kind of physical exercise in the 24 hours following the administration of the allergen extract but such recommendation is not supported by scientific evidence. We evaluated the risk of developing adverse reactions in a group of patients submitted to sublingual immunotherapy by performing a controlled exercise test.

Eleven patients were included in the study, 8 treated with grass pollen and 3 with *Parietaria* pollen extract by Staloral300® (Stallergènes, Antony, France), with the build-up phase in 11 days suggested by the manufacturer and a top dose of 300 IR. At the first maintenance dose, in all patients were measured heart rate, blood pressure, FEV1, and tryptase in blood. Then the maintenance dose was assumed and the physical exercise performed by cycloergometer maintaining a heart rate around 100 b/min and measuring again tryptase, blood pressure and FEV1.

The results showed that no patient had adverse reaction following physical exercise, neither showed significant changes in FEV1, blood pressure, or tryptase level, which was 5.57 ± 4.54 mcg/l before and 5.81 ± 4.34 mcg/l after exercise. This suggests that there is no reason to advice against physical exercise, and particularly sporting activity, in patients treated with sublingual immunotherapy thus avoiding to interfere with the subject's lifestyle and consequently with his quality of life.

INTRODUCTION

Consensus documents on allergen specific immunotherapy generally recommend to avoid any kind of physical exercise in the 24 hours following the administration of the allergen extract (1, 2). However, such recommendation is not supported by scientific evidence. To our knowledge, there is only one paper reporting late systemic reactions in two subjects treated with grass pollen extract by conventional subcutaneous route who had physical exercise when in maintenance treatment (3), while no report on this issue during sublingual immunotherapy is available.

We evaluated the risk of developing adverse reactions in a group of patients undergoing sublingual immunotherapy (SLIT) by performing a controlled exercise test.

MATERIAL AND METHODS

Eleven patients with pollen-induced allergic rhinitis were included in the study. They were submitted to high dose sublingual immunotherapy (SLIT), using in

eight subjects grass pollen and in three *Parietaria* pollen extract (Staloral300®, Stallergènes, Antony, France), with the build-up phase in 11 days suggested by the manufacturer culminating in a top dose of 300 IR (Index of Reactivity). At the day when the maintenance dose had to be administered, all patients underwent to blood drawing to measure the level of tryptase, measurement of heart rate, blood pressure, and FEV1 by a spirometer. Then the maintenance dose was assumed and the physical exercise was performed by cycloergometer for 15 minutes maintaining a heart rate around 100 b/min. Finally, a new measurement of tryptase, blood pressure and FEV1 was done. All patients gave their oral informed consent.

RESULTS

Seven patients perfectly tolerated SLIT during the build-up phase, while four – two treated with grass and two with *Parietaria* extract – had slight adverse reactions consisting in a case of oral itching and three of gastric and/or abdominal pain. The rate of such adverse reactions – 36% – is in line with the available literature (4). No patient had adverse reaction following physical exercise, neither showed significant changes in FEV1, blood pressure, or tryptase level (table 1).

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Parameter	Before physical exercise	After physical exercise
FEV1 (% of predicted)	97.09 ± 10.05	95.73 ± 11.29
Systolic blood pressure (mm Hg)	121.91 ± 13.35	125.45 ± 8.20
Heart rate	82.64 ± 9.28	87.00 ± 12.73
Tryptase level (mg/l)	5.57 ± 4.54	5.81 ± 4.34

Table 1: Mean (SD) values of FEV1, systolic blood pressure, heart rate, and tryptase before and after physical exercise.

DISCUSSION

Noninjection routes for allergen specific immunotherapy were introduced to overcome the problem of systemic reactions to conventional subcutaneous immunotherapy (SCIT), which sometimes can be severe and, even rarely, associated to fatalities (5). Among nonjection routes, SLIT was demonstrated as surely effective (6) and is currently considered as a viable alternative to SCIT in treating patients with allergic rhinitis (7, 8). As to safety, early studies reported an high frequency of adverse reactions (9) but more recent investigations demonstrated that also administering very high dosages the reactions are negligible, mainly consisting of local reactions at the site of contact, i.e. the mouth and the gastrointestinal tract, with the allergen extract (10), and the results of a meta-analysis of 22 controlled studies indicated the statement that "SLIT is a safe treatment" (6).

This excellent profile of safety led us to question, at least for SLIT, the recommendation commonly reported in consensus documents that physical exercise should be avoided in the day of administration of immunotherapy (1, 2). On the other hand, differently from SCIT, which in maintenance phase is generally administered with monthly interval, SLIT must be assumed each day or with repeated maintenance doses each week over the entire course of treatment, and the frequent avoidance of physical exercise such as sporting activity may interfere with the subject's lifestyle. The results of the present study demonstrate that also strong physical exercise, as performed by a controlled test with a cycloergometer, does not associate to any adverse reaction to an high maintenance

dose of SLIT, and the lack of possible triggering of mast cells is indicated by the concomitant measurement of tryptase – their marker of activity – which did not show significant changes from baseline values.

These findings suggest that there is no reason to advise against physical exercise, and particularly sporting activity, in patients treated with SLIT and thus that can be avoided to interfere with the subject's lifestyle and consequently with his quality of life.

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