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Proficiency testing for the skin prick test: the pressing need for quality certification among ASBAI specialists

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Skin prick tests (SPTs) are difficult to standardize, and SPT performance depends primarily on the experience of the tester. The SPT is an important diagnostic procedure in clinical allergy, but quality documentation is often not performed. The effect of several factors, such as type of device, shape, material, and applied force, has not yet been extensively investigated.

With the goal of investigating the effect of these factors on SPT performance, Chiiaranairungroj et al. evaluated 4 devices with different shapes and materials that were applied on 12 subjects under 3 different forces (30, 45, and 60 g). The results were compared with the standard method using an ALK lancet pricked by an experienced clinician. A total of 480 pricks were performed on 12 patients. Papule size and sensitivity increased with higher applied forces in all devices. Thinner lancets with a long, sharp tip had relatively higher analytical sensitivities and provided 100% sensitivity at applied forces ≥ 45 g. The pain scores for all devices at applied forces from 30 to 60 g ranged from 1.00 to 1.81, with minimal bleeding incidences (0%-4.17%). The pain score for the standard method with the ALK lancet was 2.08, with a much higher bleeding incidence (27.1%). Device type and shape and applied force are the key factors affecting SPT performance. These results could pave the way for improved SPT performance and standardization.[1]

A study conducted in Curitiba aimed to compare the results obtained with needle vs. Multi-Test II® in SPTs with different concentrations of histamine and *Dermatophagoides pteronyssinus*, as well as the pain reported by patients with each device. The study included 104 children aged from 6 to 15 years with a diagnosis of asthma and/or rhinitis and/or atopic dermatitis and with a positive SPT for *Dermatophagoides pteronyssinus*. The tests were performed using 13 x 0.3 BD Precision Glide® disposable hypodermic needles and Multi Test II® with histamine 10 mg/mL and 1 mg/mL, *Dermatophagoides pteronyssinus* extract 5,000 PNU/mL and 10,000 PNU/mL, and saline solution. Pain was assessed after each test using the Wong-Baker Faces Pain Rating Scale. SPT sensitivity was 100% for the two devices with histamine 10 mg/mL. With histamine 1 mg/mL, the Multi-test II® showed higher sensitivity (S = 86.5%) than the needle (S = 56.7%). A high degree of agreement was observed between both devices with *Dermatophagoides pteronyssinus* extract at the 10,000 PNU/mL concentration; with 5,000 PNU/mL, the degree of agreement was 69.1% (kappa = 0.2). Pain was reported by 65 children (62.5%) with the Multi-Test II® and by 48 (46.2%) with the needle (p = 0.01). Both devices showed high sensitivity. There were differences in papule size between the devices, but false-positive results were rarely observed.[2]

A proficiency system has been described to evaluate staff members in relation to the internationally recommended reproducibility in terms of coefficient of variation (CV < 40 %) and linearity (coefficient of regression > 0.85) based on blinded histamine testing using histamine 3, 10, 30, and 100 mg/mL. Fourteen allergy nurses participated in the proficiency test. More than 95% of nurses had a CV below 40%, and approximately 35% had a CV below 20% based on papule area. As for linearity (coefficient of regression), only 2 nurses produced tests with a value lower than 0.85, and 79% of nurses had a coefficient of regression higher than 0.95. Depending on the gentleness of the SPT, variability between nurses in the papule area varied more than twofold, corresponding to a 10-fold increase in histamine concentration. This would never have been detected without the use of a proficiency testing system. The described histamine test provides an objective system to evaluate basic SPT quality and assessment standards, especially for documentation in scientific studies.

In view of the lack of standardization for SPT, the divergent results between devices and testers, the lack of documentation of standardized assessments and reproducibility of results among residents and graduate students during training, and the fact that performing and interpreting SPTs in Brazil is considered a medical

procedure, there is an urgent need for ASBAI to conduct SPT proficiency testing to safeguard the health of patients with allergies and guarantee the quality of the service provided.

References

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