CONTACT HYPERSENSITIVITY TO BRILLIANT GREEN AND GENTIAN VIOLET

J. S. PASRICHA AND RAMJI GUPTA

Summary

Patch tests in 215 patients having contact dermatitis due to local antibacterial agents, revealed 18 patients having pos tive patch tesis with 1% aqueous brilliant green and one patient with 1% aqueous gentian violet. Twelve of the patients having positive patch tests with brilliant green were tested again with increasing dilutions of brilliant green to ascertain the titre of contact hypersensitivity (TCH), i.e. the highest dilution or the lowest concentration of brilliant green giving a positive patch test in the patient. The value of TCH differed widely in different patients, the lowest concentration giving a positive patch test being 0.02% in two patients. Ten patients with positive patch tests were subjected to the usage test which consisted of painting 1% aqueous brilliant green on a normal skin area of the forearm twice daily for seven days. In four patients the usage test was positive.

KEY WORDS: Contact hypersensitivity; Brilliant green; gentian violet; Patch test; Usage test.

Introduction

Brilliant green and gentian violet are considered to be the safest local antibacterial agents though contact hypersensitivity to both these agents has been mentioned in the literature[1]. In a recent paper[2] we reported two patients having positive patch tests with 1% aqueous brilliant green, but subsequently more patients were observed to give positive reactions with this agent. A study was therefore undertaken to assess the significance of positive patch test reactions in these patients.

Materials and Methods

All patients suspected to have contact dermatitis due to a local antibacterial agent were patch tested with various commonly used antibacterial agents including 1% aqueous brilliant green and 1% aqueous gentian violet. Patients who showed a positive patch test with either of these agents were patch tested again with further dilutions of these agents to determine the highest dilution (or the lowest concentration) which still produced a distinct positive reaction. The concentrations used were 1%, 0.1% 0.5%, 0.2%, 0.05%, 0.02% and 0.01%. The dilutions were made with distilled water.

Patients having positive patch tests with brilliant green, were instructed to apply 1% aqueous solution of brilliant green on a 5 cm diameter area of the skin on the flexure surface of the forearm twice daily for 7 days (usage test). Presence of itching and papules or papulo-vesicles at the site of application was considered to indicate a positive test. In case of doubt, the

Department of Dermatology & Venereology
All India Institute of Medical Sciences,
New Delhi-110029, India.

patient was asked to continue the application for the second week as well.

Results

Two hundred and fifteen patients were patch tested with various antibacterial agents out of which 18 (8.4%) patients showed a positive patch test with 1% aqueous brilliant green (Fig. 1) and one (0.5%) of these patients was positive with 1% aqueous gentian violet as well. Twelve of these patients were patch tested with further dilutions of brilliant green, the lowest concentration producing a distinctly positive patch test (the titre of contact hypersensitivity) in 2 patients was 1%, in another 2 patients it was 0.5%, in 1 patient 0.2%, in 3 patients 0.1%, in 2 patients 0.05% and in 2 patients 0.02%. The usage test was positive (Fig. 2) in 4 cases. In two of these patients the usage test became positive on the second day, in one patient on the fifth day and in the fourth patient on the tenth day.

Discussion

Our findings provided ample evidence that brilliant green, which is supposed to be one of the safest antibacterial agents, can cause contact hypersensitivity in some patients. The main question, however, is whether all the 18 patients having positive patch tests with brilliant green are allergic to the dye. In 12 of these patients, the test was repeated at least once and it was positive in all. Negativity of the usage test however, in 6 of the 10 patients is intriguing though it has been observed earlier too[3]. Since in these patients, brilliant green was

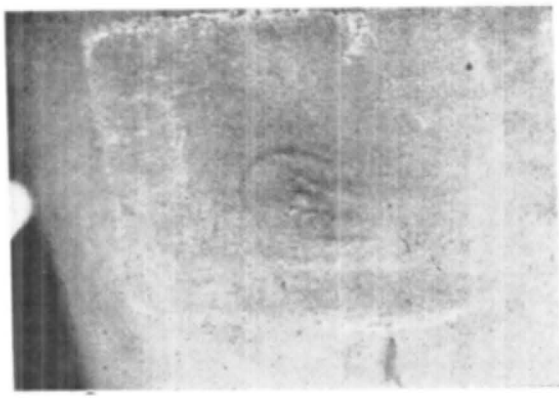

Fig. 1
Papular reaction to patch test with 1% aqueous brilliant green.

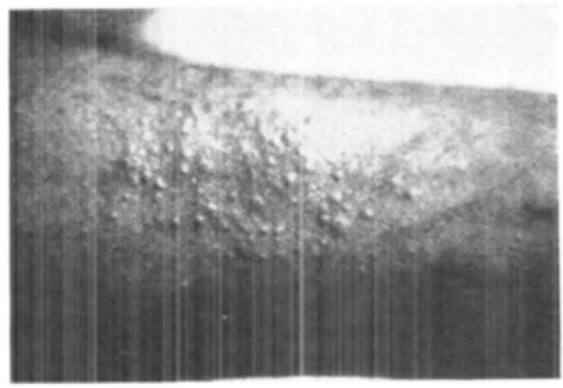

Fig. 2
Papular reaction to usage test with 1% aqueous brilliant green.

applied on the normal skin, it presumably did not penetrate the epidermal barrier in an adequate quantity to produce clinically evident dermatitis. On a lesion, however, where the epidermal barrier is already broken, brilliant green could have worsened or produced the dermatitis. A negative usage test should thus be interpreted as a relatively low contact hypersensitivity. Nevertheless, there were at least four patients where the usage test was also positive. This should warn us that brilliant green is not as safe an agent as it is generally considered. Three of these cases had observed worsening of the lesions following application of brilliant green.

In comparison, gentian violet seems to be far safer. There was only one patient having a positive patch test with gentian violet. In our clinic, therefore, whenever there is any suspicion of contact hypersensitivity to a drug, it is a routine practice to undertake prior patch tests to select the safe antibacterial agent for local therapy. This practice is recommended to be adopted.

References

1. Bielicky T and Novak M : Contact-group sensitization to triphenylmethane dyes, gentian violet, brilliant green and malachite green. Arch Derm, 1969 ; 100 : 540.

2. Pasricha JS and Guru B : Contact hypersensitivity to local antibacterial agents. Ind J Derm Ven and Lep 1981; 47:27.

3. Prystowsky SD, Nonomura JH, Smith RW and Allen AM : Allergic hypersensitivity to neomycin, relationship between patch test reactions and 'use' tests. Arch Derm 1979; 115 ; 713.