

The Role of Dental Series Patch Tests in Oral Mucosal Diseases

To the Editor:

Dental materials have been considered responsible for clinical manifestations of contact hypersensitivity in the mouth. It might be, however, very difficult to assess the clinical relevance of haptens contained in dental materials.¹ In this study, we investigated the frequency, the etiologic role, and the clinical relevance of various dental materials as contact allergens in 167 patients (102 females and 65 males aged 24–72 years [mean age, 54.7 years]) who had a clinical history of various manifestations of oral discomfort after dental procedures (amalgam fillings, dental restorations, metal crowns and bridges, resin crowns, etc).

Patch testing with the Società Italiana di Dermatologia e Allergologia Professionale e Ambientale (SIDAPA) integrated standard series and a “dental series” (Euromedical S.r.l. Calolziocorte, Milan, Italy) was used to investigate contact hypersensitivity to dental products. If a clear relationship between oral disease and a positive reaction to a patch test was found, the removal of dental prostheses or the replacement of dental restorations was recommended to patients.

Among 167 patch-tested patients, 49 (29.3%) showed positive response to one or more haptens. The frequency of patch-test positivity and related haptens is shown in Table 1. The most frequent positive substances were nickel sulfate (16.2%), gold sodium thiosulfate (10.2%), cobalt chloride (9%), palladium chloride (2.4%), mercury (2.4%), and eugenol (2.4%).

Only 8 patients had their dental restorative materials removed or replaced; among these, 3 patients with oral lichenoid reactions showed improvement and a resolution of

lesions, whereas the remaining 5 patients (1 with recurrent aphthous stomatitis, 1 with oral lichenoid reactions, 2 with cheilitis, and 1 with stomatitis) did not improve. Among the 41 subjects who refused to have their dental restorative materials removed or replaced, 12 patients (6 with burning mouth syndrome, 3 with unspecific symptoms, 2 with perioral dermatitis, and 1 with gingivitis) showed improvement over time. Among the 118 patients (70.7%) who had negative patch-test results and whose dental materials were not removed, 19 subjects showed spontaneous improvement of their symptoms.

For numerous haptens, we may consider the positive response as a sensitization because a clear clinical relevance was found in only a few cases (3 of 167). Accordingly, it is difficult to establish a relationship between a hypersensitivity to dental products and mucosal symptoms or signs. Only the removal of dental materials and consequent improvement of the disease may demonstrate the haptens' responsibility.

We must take into account that many oral manifestations are provoked by irritant stimuli or are exacerbated by the ingestion of food additives.² In fact, in burning mouth syndrome, patch testing with dental products usually gives negative responses³; or, in case of a positive patch test, the result must be considered as sensitization from other sources. In fact, in our case, six patients with burning mouth syndrome and positive results in dental series improved despite the maintenance of their dental restorative materials.

The causes of recurrent aphthous stomatitis are still unknown, but immune response to dental materials does not seem to be involved in the etiopathogenesis of this disorder.⁴

The three patients in whom a real clinical relevance between the oral manifestations and patch-test positivity was found were affected by oral lichenoid lesions. Two of them displayed positive results for gold sodium thiosulfate; the replacement of their gold crowns with ceramic materials induced an important improvement in 1 month. The third patient presented oral lichenoid lesions in an area adjacent to amalgam restoration, with positive results to mercury and mercury amalgam. The lesions resolved after the removal of amalgam.

Nevertheless, the interpretation of patch-test results seems difficult; hence, we recommend investigation into the responsibility of dental materials as haptens causing oral allergic manifestations not only by standard series patch tests but also by dental series patch tests in all patients with oral diseases. However, the replacement of dental restorative

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Table 1. Symptoms and Signs of Oral Manifestations in 167 Patients, Frequency of Patch-Test Positivity, and Related Haptens*

Symptom or Sign	No. of Patients (%)	No. of Patients with Positive Patch Tests (%)		Ns	GSTS	Cc	Pc	M	MA	Me	E	Total Positive Patch Tests
Burning mouth syndrome	41 (24.6)	15 (36.6)	7	4	4	0	0	0	0	1	2	18
Cheilitis and perioral dermatitis	36 (21.6)	12 (33.3)	6	5	5	0	2	1	1	1	2	22
Oral lichenoid reactions	27 (16.2)	10 (37.0)	3	4	3	2	2	2	0	0	0	16
Recurrent aphthous stomatitis	16 (9.6)	2 (12.5)	2	0	1	1	0	0	0	0	0	4
Stomatitis	12 (7.2)	2 (16.7)	2	2	0	0	0	0	0	1	0	5
Gingivitis	9 (5.4)	1 (11.1)	1	0	1	1	0	0	0	0	0	3
Orofacial granulomatosis	3 (1.8)	1 (33.3)	1	0	0	0	0	0	0	0	0	1
Other (headache, malaise, fatigue)	27 (16.2)	6 (22.2)	5	0	3	0	0	0	0	0	0	8
Total allergic patients (%)	—	—	27 (16.2)	15 (9.0)	17 (10.2)	4 (2.4)	4 (2.4)	3 (1.8)	3 (1.8)	4 (2.4)	77 (46.1)	

Cc = cobalt chloride; E = eugenol; GSTS = gold sodium thiosulfate; M = mercury; MA = mercury amalgam; Me = methacrylates; Ns = nickel sulfate; Pc = palladium chloride.

*In one patient, several manifestations and more than one positive response to patch testing could be present.

materials is often expensive and time consuming, and it can expose the patients to various complications.¹

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