

# SYMPTOMATIC GEOGRAPHIC TONGUE IN AN EDENTULOUS PATIENT WITH HYPERSENSITIVITY TO DENTURE BASE RESIN

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## Abstract:

Geographic tongue is a commonly occurring painless inflammatory disorder that mainly affects dorsum of the tongue. The cause of geographic tongue is unknown, but a polygenic inheritance and the association with a number of other genetic or medical conditions have been suggested. Generally patients with geographic tongue are asymptomatic. In some cases sensitivity to denture base resins in patients with geographic tongue is reported. This report presents an edentulous patient with symptomatic geographic tongue. The patch test revealed that severe burning sensation over the tongue involving various parts of oral mucosa was due to hypersensitivity to Auto polymerizing acrylic resin.

**Key words:** Geographic tongue, burning sensation, erythematous, patch test, hypersensitivity.

## Introduction

Geographic tongue, or benign migratory glossitis, is usually an asymptomatic inflammatory disorder of the tongue mucosa of unknown etiology. If symptoms are present, they may include burning mouth, general oral discomfort or feeling of something abnormal in mouth. Rayer, in 1831, was probably the first to draw attention to this condition and designated it as pityriasis of tongue. Barker, in 1880, and later Butlin described it as wandering rash of tongue.<sup>1</sup>

The dominant clinical characteristic of the condition is a constantly changing pattern of serpiginous white lines, surrounding the area of irregularly shaped erythematous macules or smooth, depapillated mucosa. The changing appearance with the depapillated areas resemble to the continental outlines on

the globe, hence it is popularly known as geographic tongue.<sup>2</sup> It usually affects the tongue but other oral mucosal sites may be affected less frequently and in such cases the condition is called as stomatitis erythema migrans or ectopic geographic tongue.<sup>3</sup> The geographic tongue condition is observed in approximately 3% of the population worldwide with a female preponderance.<sup>4</sup> Various factors have been suggested which are implicated in its etiology. They include hereditary factors, association with other systemic disease and fissured tongue. Psychosomatic factors, stress, asthma, atopy, allergy, psoriasis, hormonal factors, use of oral contraceptives, smoking and deficiency of vitamin B12, B6, folic acid, iron and zinc have also been proposed to be contributing factors as well.<sup>5</sup> Diagnosis of geographic tongue is based on the clinical aspect of the lesions and patient history and seldom requires histologic confirmation.

Asymptomatic, geographic tongue requires no treatment. Several treatments have been suggested in symptomatic patients. Topical anaesthetics, topical corticosteroids, antihistaminics and antifungals can also be used to alleviate burning symptoms.

### **Case Report**

A 60 year old female patient reported to the department of Prosthodontics with chief complaint of severe burning sensation over tongue and other parts of oral cavity. Patient also desired fabrication of a set of new dentures. She was a denture wearer for the past 12 years. The dentures which patient was wearing (Figure 1) were worn out and had been relined with autopolymerizing acrylic resin. On clinical examination, erythematous patches (Figure 2) of different shapes bounded by whitish line were noticed over the dorsum of tongue. She explained that these patches were present since her childhood and they kept on changing their shape and location. These are the classical features of geographic tongue. Patient revealed a positive family history as her elder sister also had the similar clinical appearance of the tongue. Patient reported occasional discomfort in the form of burning sensation over the tongue whenever she used some specific substances which included spicy foods, acidic foods, toothpaste, walnut, banana and brinjal. Patient also reported altered taste sensation and dryness of mouth. But main problem of burning tongue started around 2 years back. Detailed questioning revealed that relining of the dentures and beginning of the severe burning was synchronous. To get relief from this condition patient had visited her dentist many times. It was found that treatment with various medications had been attempted, including non-steroidal anti inflammatory drugs, mucopain ointment, candid lotion, but the symptoms did not respond significantly to any of these medications. She also consulted general physician and had taken iron, folic acid and multivitamin supplements along with Kenacort (Triamcinolone acetonide) 0.1% oral paste to be applied over the lesions twice daily and pregabalin 150 mg tablet once a day for two weeks. But this medication improved the symptoms only marginally. Patient when visited the department was apprehensive and under stress due to non resolving problem. Patient was advised to discontinue the dentures and Patch test<sup>6,7,8</sup> was done which showed allergic reaction (Figure-3) to autopolymerizing acrylic resin. So reassurance was given to her and, as the mucosa over the residual ridges was not inflamed, construction of

new complete denture was considered. While fabricating a new set of complete dentures every effort was made to resolve the condition without aggravating it. Maxillary and mandibular primary impressions were made in alginate (Zelgan plus, Dentsply). The impressions were poured in dental plaster. After placement of wax spacer for pressure control, custom trays were fabricated. Single step border molding with putty consistency of polyvinylsiloxane (elite HD+, Zhermack) was performed and secondary impressions (Figure-4) were made with light body consistency of polyvinylsiloxane<sup>9</sup> (elite HD+, Zhermack). Impressions were poured in dental stone and master cast were fabricated. Stable record bases were made over the master cast and wax occlusal rims were carefully adapted over these record bases. This was followed by recording of jaw relations and artificial teeth arrangement in semi adjustable articulator. After try-in, the trial dentures were acrylized in high impact heat polymerized acrylic resin (Trevalon HI, Dentsply India Ltd) at 165° F for 90 minutes followed by 30 minutes at a boil. The dentures were inserted after proper finishing and polishing. In addition to the general post insertion instructions, patient was also instructed to avoid the use of substances which have been precipitating the symptoms.

Meanwhile the denture fabrication was under progress, critical evaluation of the patient's clinical condition and keeping in mind the various medications tried so far, it was decided to start treatment with clonazepam<sup>10,11</sup> locally 0.5 mg 3 times daily after each meal, so as to relieve her symptoms quickly. Clonazepam acts by locally disrupting the neuropathologic mechanism that causes pain and burning sensation. Patient was instructed to dissolve the clonazepam tablet (Lonazep MD 0.5, Sun Pharma) in the mouth and keeping it there for three minutes without swallowing and then to expectorate saliva. Within one week, the clinical condition of the tongue and burning symptoms were slightly improved without any side effect and no exacerbation. After two weeks, patient's condition was dramatically improved without any complaints from her. Follow up after third week revealed that condition (figure-5) has almost resolved.

At six month follow up (Figure-6) patient reported that except for one instance of mild burning, the denture wearing had been uneventful.



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

## Discussion

Geographic tongue is more common in people with allergic diseases such as atopy asthma, eczema and contact allergy but a clear pathogenic link with allergy has not been actually demonstrated<sup>5</sup>. Hypersensitivity to dental materials may contribute to the etiology<sup>12</sup> or the exacerbation of the condition, but no definite evidences are available. In the present case the use of autopolymerized resin has been thought to provoke a hypersensitivity reaction which led to the exacerbation of the condition and related symptoms.

Although any allergic manifestation to acrylic resin is extremely rare, reactions are caused more frequently by the autopolymerizing resin than by resins which are properly heat cured. This is attributed to the lower concentration of the residual monomer in the heat cured resin. It has been demonstrated that the heat cure resin have 0.2 to 1.0 % residual monomer in comparison to autopolymerizing resin which may contain more than 5.0%<sup>6</sup> residual monomer. Normally allergic response can be easily confused with chemical or thermal burns or traumatic injuries or irritations. A dermal or mucosal patch test must be positive as necessary to differentiate an allergic response from response due to other causes. In this patient patch test was performed to confirm whether the problems were due to allergic reaction to acrylic resin. The upper outer arm was cleansed with alcohol, and two patches were placed superiorly to inferiorly as follows: 1) A 1x5x10 mm sample of autopolymerizing acrylic resin. 2) A 1x5x10 mm sample of heat polymerized acrylic resin. The patches were placed with small gauze pads and hypoallergenic adhesive tape. The tape was placed circumferentially around the arm for better adherence. The results at 48 hours were recorded (fig.3) as: 1) Positive, moderate reaction. 2) Negative, no reaction. These results were consistent with a delayed hypersensitivity reaction to the residual monomer and established that the severe burning symptoms were due hypersensitivity to autopolymerizing acrylic resin.

## Conclusion

Geographic tongue is a benign condition that never turns into malignancy. There are also no reported consequences or risks associated with this condition. The only complication is the discomfort due to the persistent clinical appearance and frequent recurrence after healing. The reported association between geographic tongue and

allergic diseases/hypersensitivity to dental materials could sometimes present a challenge for the dental professionals to identify the offending cause and formulate an effective treatment plan.

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