Median rhomboid glossitis caused by Candida?

I. van der Waal, G. Beemster, and W. A. M. van der Kwast, Amsterdam, The Netherlands

DEPARTMENT OF ORAL SURGERY AND DEPARTMENT OF ORAL PATHOLOGY, FREE UNIVERSITY

The etiology and pathogenesis of median rhomboid glossitis have been subjects of controversial discussions for a long time. In recent years, the possible role of Candida albicans has been stressed. The findings in 18 patients with median rhomboid glossitis only support partly the hypothesis of Candida albicans being an important etiologic factor.

In the first decades of this century, median rhomboid glossitis was considered an inflammatory lesion. From about 1934 until about 1970, there was almost uniform agreement in the literature to consider the condition a developmental disorder. A persistent tuberculum impar was supposed to explain the occurrence of this lesion anterior to the foramen coecum of the tongue. In recent years, serious doubt has arisen about its developmental nature, and an inflammatory cause has again been suggested. In 1975, an article was published entitled "Median rhomboid glossitis—candidiasis and not a developmental anomaly." Ten patients were reported with "chronic median glossitis." All lesions occurred in the midline and in all cases, candidal hyphae were found within the superficial layers of the epithelium. It was concluded that median rhomboid glossitis should be considered chronic hyperplastic candidiasis and not a developmental anomaly.

MATERIAL AND METHODS

In a 7-year-period, 18 patients with median rhomboid glossitis were seen in approximately 35,000 patients referred to an oral surgery department. All lesions were devoid of lingual papillae, and the majority showed some redness. Some of the lesions were smooth and somewhat eroded, while others showed a coarse, granular texture. In a few patients, the lesion was somewhat elevated and lobulated (Fig. 1). The shape of the lesions varied from round to rhomboid. Sizes ranged from 0.5 to 2.0 cm.; the majority were rather well demarcated. In some cases, slight induration was felt. No other lingual or oral lesions were noticed. All but one of the patients were healthy, and none of them was or had been using medicaments for a considerable period of time. All were Caucasian. There were ten males and eight females. The mean age was about 40 years (Table I). In about half the patients, the lingual lesion was an incidental finding during routine oral examination. The other half was referred because of slight pain, irritation, or itching sensation on their tongues. Fifteen patients were questioned about smoking, and thirteen of these admitted smoking an average of 10 cigarettes each day.

In all cases, a provisional diagnosis of median rhomboid glossitis was made, although in one patient the lesion was not actually located in the midline (Fig. 2). Using local anesthesia, an excisional biopsy was done in eight patients, and an incisional biopsy was performed in another eight patients. The remaining two patients refused to have a biopsy taken; a smear for
Table I. Patient data

<table>
<thead>
<tr>
<th>Patient</th>
<th>Sex</th>
<th>Age (yes)</th>
<th>Symptoms</th>
<th>Smoking* habits</th>
<th>Cytology</th>
<th>Biopsy</th>
<th>Treatment</th>
<th>Follow-up period (months)</th>
<th>Clinical aspect at end of follow-up period</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>F</td>
<td>45</td>
<td>Slight irritation of unknown duration</td>
<td>+++</td>
<td>-</td>
<td>-</td>
<td>Excisional biopsy</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>28</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>-</td>
<td>Unknown</td>
</tr>
<tr>
<td>3</td>
<td>M</td>
<td>27</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>Antifungal</td>
<td>1</td>
<td>Unchanged</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>40</td>
<td>No</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>2</td>
<td>Slight improvement</td>
</tr>
<tr>
<td>5</td>
<td>M</td>
<td>51</td>
<td>Slightly painful for the last 5 weeks</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>5</td>
<td>No recurrence</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>30</td>
<td>Slight irritation for at least some months</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Antifungal</td>
<td>6</td>
<td>Unchanged</td>
</tr>
<tr>
<td>7</td>
<td>F</td>
<td>26</td>
<td>Irritation of about 1 year duration</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>7</td>
<td>No recurrence</td>
</tr>
<tr>
<td>8</td>
<td>M</td>
<td>44</td>
<td>Slight irritation of unknown duration</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>11</td>
<td>No recurrence</td>
</tr>
<tr>
<td>9</td>
<td>M</td>
<td>30</td>
<td>No</td>
<td>+++</td>
<td>+</td>
<td>+</td>
<td>Antifungal</td>
<td>11</td>
<td>Unchanged</td>
</tr>
<tr>
<td>10</td>
<td>M</td>
<td>42</td>
<td>No</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>16</td>
<td>No recurrence</td>
</tr>
<tr>
<td>11</td>
<td>M</td>
<td>38</td>
<td>Recurrent pain of 1 year duration</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Antifungal</td>
<td>26</td>
<td>Unchanged</td>
</tr>
<tr>
<td>12</td>
<td>M</td>
<td>37</td>
<td>Slight irritation for about 18 months</td>
<td>0</td>
<td>-</td>
<td>+</td>
<td>Antifungal</td>
<td>28</td>
<td>Slight improvement</td>
</tr>
<tr>
<td>13</td>
<td>F</td>
<td>53</td>
<td>Itching sensation for an unknown period of time</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>34</td>
<td>No recurrence</td>
</tr>
<tr>
<td>14</td>
<td>M</td>
<td>42</td>
<td>No</td>
<td>+++</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>35</td>
<td>Unchanged</td>
</tr>
<tr>
<td>15</td>
<td>F</td>
<td>49</td>
<td>Moderate irritation for about 6 months</td>
<td>+++</td>
<td>+</td>
<td>-</td>
<td>Cryosurgery</td>
<td>36</td>
<td>No recurrence</td>
</tr>
<tr>
<td>16</td>
<td>M</td>
<td>42</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>-</td>
<td>37</td>
<td>Unchanged</td>
</tr>
<tr>
<td>17</td>
<td>F</td>
<td>45</td>
<td>No</td>
<td>-</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>48</td>
<td>No recurrence</td>
</tr>
<tr>
<td>18</td>
<td>F</td>
<td>28</td>
<td>Slight irritation for about 4 years</td>
<td>+</td>
<td>-</td>
<td>+</td>
<td>Excisional biopsy</td>
<td>50</td>
<td>Recurrence after 12 months; ever since unchanged</td>
</tr>
</tbody>
</table>

*0. No smoking habits; +, 1 to 5 cigarettes a day; ++, 5 to 10 a day; +++, more than 10 a day; -, not asked.

cytologic examination was done instead. In only one of the eighteen patients, a scraping of the lingual surface was sent for culture of *Candida albicans*; this was positive. Because we were unaware at that time of the work by Lehner on estimations of the antibody titres to *Candida albicans* in serum and saliva, no such examination were done.

RESULTS

In the eight patients who had undergone an excisional biopsy, healing was uneventful, except in one patient, who experienced a recurrence 1 year later (Figs. 3 and 4). In one patient, the incisional biopsy was followed by cryosurgery; healing was uneventful. In six of the remaining seven patients in whom only an incisional biopsy had been done, a fungicide was applied topically twice a day for a period lasting several weeks to months. In two patients, some improvement was noticed. Continuation of the applications for 2 months did not change this number. Three patients refused antifungal treatment. A survey of the treatment and follow-up is given in Table I.
Median rhomboid glossitis

Fig. 2. A 28-year-old woman with a smooth, bright red lesion just left of the midline. "Atypical" median rhomboid glossitis. (Patient No. 18, Table I.)

All hematoxylin and eosin-stained sections showed the aspects that in the past have been described as characteristic of median rhomboid glossitis: "the mucosa is hypertrophied, the papillary bodies are prominent, and usually hyperkeratosis is present. Deviation from the normal cellular components of the mucosa is rarely noted and there is only a mild dyskeratosis. In the submucosa there are many lymphocytes and plasma cells that tend to form aggregates that hug the elongated epithelial downgrowth. There is an associated increase in the number of capillaries and lymphatics and a variable amount of fibrosis." The aforementioned criteria are not considered typical of median rhomboid glossitis anymore, but they do seem to be indicative of a fungal infection. In all specimens, presence of Candida was seen in the PAS-stained sections (Figs. 5 and 6). In only two cases was more than one PAS-stained section necessary to demonstrate the Candida. In all cases, hyphae were seen in the upper half of the epithelium, penetrating perpendicular to the surface. The smear for cytologic examination was positive for Candida in one case, while the other one was negative.

DISCUSSION AND CONCLUSION

As we know from the work of Simons,7 the presence of Candida albicans on the surface of the oral mucosa can be considered more or less normal. In 44 percent of scrapings of 100 normal-looking tongues in students, yeastlike colonies were seen, while in 70 percent, the presence of Candida was shown on Sabouraud's agar.

Fig. 3. Same patient from Fig. 2, 3 weeks after excisional biopsy. Nice healing is evident.

Fig. 4. Same patient from Figs. 2 and 3. A recurrence was noticed 1 year postoperatively. No additional treatment was instituted.

In a pilot study of 71 cadaver tongues, we have found intraepithelial presence of mycelial elements in the foramen coecum region in five cases, i.e., about 7 percent. Macroscopically, none of the tongues showed any abnormality of the dorsal surface. The group consisted of 50 men and 21 women, mean age 65 years, who died from a variety of diseases. Our 7 percent is in contrast with the 38 percent figure reported by Soames,8 who did a similar study. Several reasons can be thought of to explain those differences, such as the exact regions of the tongue that have been examined and the number of PAS-stained sections that have been looked at.

In their study, Jespen and Winther9 found that Candida albicans was cultured in all cases where hyphae
Fig. 5. Specimen of an incisional biopsy of median rhomboid glossitis. The surface is devoid of lingual papillae. The rete ridges are irregular. Notice the mild subepithelial infiltrate. The candidal hyphae in the superficial layers of the epithelium are clearly visible. (PAS-staining. Original magnification, X53.)

were present in histologic specimens. Since culturing was done in only one of our cases, it is more correct to classify the mycelial elements in the present study as *Candida* only. The finding of *Candida* in every biopsy specimen of so-called median rhomboid glossitis is suggestive of an infectious disorder. The conclusion made by Cooke—"the condition described as median rhomboid glossitis is chronic hyperplastic candidiasis and not a developmental anomaly"—seems not fully justified. The presence of *Candida* in the epithelium may very well be secondary to some other agent or phenomenon; it still may be true that there is indeed a persistent tuberculum impar devoid of lingual papillae which is more susceptible to invasion by *Candida*.

In their studies on artificially induced candidal infection of the rat’s tongue, Russell and Jones observed loss of lingual papillae after 17 weeks in about half of their rats. Their histologic description of the affected dorsal surface of the tongue was very similar to the one that can be given for median rhomboid glossitis. This was true for the epithelial as well as for the subepithelial changes in the connective and muscular tissues. The clinical aspects of the lingual changes in their rats, however, were not similar to those of median rhomboid glossitis in men. Besides, in some rats, too, lesions in other parts of the oral cavity had been produced. In our patients with median rhomboid glossitis, no other lesions were observed.

In 1963, Jansen and associates reported on erosive and granular lesions of the lower lip in 15 patients. Their article was entitled "Candidal cheilitis." The habit of licking the lips was supposed to be the main etiologic factor, with *Candida* a secondary invader. It is hard to think of a habit that could irritate the foramen coecum region of the tongue, although it may be possible to scrape the dorsal surface along the incisal edges of the upper front teeth. We have not asked our patients about any such habits. The finding that all but two
patients whom we questioned on their smoking habits answered in the affirmative may be of significance in the etiology or pathogenesis of the lingual lesion.

For the present, we do not feel justified in fully rejecting the developmental etiology of median rhomboid glossitis. The significance of Candida is perhaps emphasized too much in the literature. Rather recently, Farman and associates\textsuperscript{15} reported on median rhomboid; the term central papillary atrophy of the tongue was preferred. It was suggested that microvascular changes in the tongue might be a contributing factor in that condition, the impaired blood supply perhaps being a predisposing factor to development of Candida invasion.\textsuperscript{16} That hypothesis certainly seems to deserve further attention.

Carcinomas arising in the area just ventral to the foramen coecum are extremely rare, with only a few cases reported in the literature. Some of those cases are even questionable. For instance, Burkes and Lewis reported on a carcinoma arising in the area of median rhomboid glossitis in a 44-year-old woman but expressed their own doubt by mentioning that the diagnosis was made after extensive deliberation. Unfortunately, no remarks were made about the possible presence of Candida in the histologic specimen.

In asymptomatic cases of median rhomboid glossitis, the necessity of treatment is questionable. We have done excisional biopsies more or less for academic reasons in some asymptomatic patients, and only with permission of those patients. In case of median rhomboid glossitis accompanied by pain or irritation, antifungal treatment may be considered. In the absence of induration, this even may be given without a previous biopsy. In those instances, smears for cytologic examination and/or culture should be taken to confirm the supposed presence of Candida albicans. When induration is felt or when the clinical aspect is not in accordance with that of median rhomboid glossitis, a biopsy is mandatory.

REFERENCES


Reprint requests to:
Dr. I. van der Waal
AZVU
De Boelelaan 117
Amsterdam
The Netherlands