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SIGNIFICANCE OF A FURRED TONGUE

BY

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Belief in a furred tongue as a sign of disease is certainly both old and widespread, and most people to-day believe that a furred tongue is a sign of something wrong, the usual belief being that a furred tongue is a sign of a disordered bowel.

Likewise, most doctors would probably regard inspection of the tongue for furring as a useful part of the physical examination of their patients; yet, when one considers how often the tongue is inspected, and for how long a furred tongue has been regarded as an important physical sign, it is surprising how little seems to be known of the causes of furring. Present-day textbooks usually quote the supposed connexion between a disordered bowel and a furred tongue, but mention, in addition, a variety of other conditions, including local disease of the mouth and throat, as causes of furring; but Gans (1954) concluded that a furred tongue is as common in health as in disease, and is therefore of no clinical significance whatsoever.

The aim of the present investigation was to answer three questions: (1) Is a furred tongue more common in disease than in health? (2) If so, is a furred tongue more common in any one disease or group of diseases than in any other? (3) As a corollary to the first two questions, is a furred tongue a useful clinical sign?

Method

It was decided to investigate this problem by inspecting the tongues of all patients seen in general practice over a period of about six months, until the necessary facts on 700 patients had been collected. There was no selection of cases and no patient was included twice in the series. One hundred cases of accidents of a minor nature, such as bruises, sprains, and lacerations, formed the control group; the remaining 600 consisted of 200 children and 400 adults.

In every case the state of the tongue, the diagnosis, the presence of fever, the bowel habits, the smoking habits, and

the state of the teeth were recorded by a simple code. Tongues were classified into Group 1, consisting of definitely clean tongues; Group 2, the intermediate group, consisting of all cases in which there was doubt whether to classify the tongue as clean or furred; and Group 3, consisting of definitely furred tongues. Wherever possible the tongue was inspected before any questions were asked, so that a decision on furring could be made before the diagnosis was known.

Smokers were classified as "light" if they smoked fewer than five cigarettes a day, "moderate" if they smoked five to fifteen a day; and "heavy" if they smoked over fifteen. Teeth were recorded as "healthy, mildly decayed, grossly decayed, or edentulous."

A fever was recorded as present if the patient was found to have a raised temperature or if there was a clear and definite history of fever within the last twenty-four hours.

No attempt was made to differentiate furring of the back of the tongue from furring of the front. In most cases the fur is thickest at the back and along the middle of the tongue, and thinnest at the edges, probably because the teeth rub the fur off the edges. If the tongue was clean except for a small patch of fur at the back it was classified as clean, and a tongue was regarded as furred when the fur covered most or all of the dorsum of the tongue.

Results

Control Group

In this group of 100 casualty cases furring was found in 12% and a clean tongue in 55%, with 33% in the intermediate group. However, when this group is analysed for smoking habits, it will be seen that most of the people with furred tongues were moderate or heavy smokers (Table I). This tendency for smoking to produce a furred tongue was found constantly throughout the investigation, for, although the figures in the control group are small for statistical certainty, the same effect of smoking is shown in Table II.

TABLE I.—Control Group (100 Cases)

	Children	Adults				Whole Control Group
		Non-smokers	Light Smokers	Moderate Smokers	Heavy Smokers	
Clean tongues ..	22 (75.9%)	25 (67.6%)	4 (40%)	3 (20%)	1 (11.1%)	55
Intermediate ..	5 (17.2%)	10 (27.0%)	6 (60%)	9 (60%)	3 (33.3%)	33
Furred tongues	2 (6.9%)	2 (5.4%)	0	3 (20%)	5 (55.6%)	12
No. of cases	29	37	10	15	9	100

TABLE II.—Effect of Smoking on the Tongue (234 Cases of Non-infectious Diseases)

	Non-smokers	Light Smokers	Moderate Smokers	Heavy Smokers	Totals
Clean tongues ..	74 (65.5%)	35 (63.6%)	9 (22.5%)	4 (15.4%)	122
Intermediate ..	33 (29.2%)	18 (32.7%)	23 (57.5%)	11 (42.3%)	85
Furred tongues ..	6 (5.3%)	2 (3.7%)	8 (20%)	11 (42.3%)	27
Totals ..	113	55	40	26	234

Table II consists of 234 cases selected because they were suffering from some illness other than an infection, since, as is shown later, infections are themselves sometimes a cause of furring. Smoking is in fact one of the commonest causes of a furred tongue, and for this reason the proportion of moderate and heavy smokers is shown in all subsequent tables.

The conclusion from the control group, therefore, is that in healthy people only about one out of twenty will have a definite furred tongue, unless the person is a smoker, in

which case the chance of having a furred tongue is greatly increased, and increased in proportion to the amount smoked.

Infectious Illnesses

Of all the infections, those of the respiratory tract are by far the commonest in general practice, and in these a furred tongue is the rule. Of the 700 cases, 240 (122 adults and 118 children) were of infection of the respiratory tract. The results in this group are shown in Table III. They show

TABLE III.—Infections of Respiratory Tract (240 Cases)

	Total		Without Fever		With Fever	
	Children	Adults	Children	Adults	Children	Adults
Clean tongues ..	17 (14.4%)	23 (18.9%)	12 (21.4%)	20 (24.7%)	5 (8.1%)	3 (7.3%)
Intermediate ..	37 (31.4%)	38 (31.1%)	23 (41.1%)	35 (43.2%)	14 (22.6%)	3 (7.3%)
Furred tongues ..	64 (54.2%)	61 (50%)	21 (37.5%)	26 (32.1%)	43 (69.3%)	35 (85.4%)
Totals ..	118	122	56	81	62	41
% of moderate and heavy smokers	0	23	0	28	0	14

that infections of the respiratory tract tend to produce a furred tongue even in the absence of fever, but if the patient is feverish the tendency is even greater. These cases were further classified into the common cold (108 cases); tonsillitis (50 cases); bronchitis, pleurisy, and pneumonia (28 cases); influenza (15 cases); sinusitis and otitis media (39 cases). When allowance had been made for fever, there was no significant difference between the various types of infection, but it was noticed that tonsillitis is the disease *par excellence* for producing a furred tongue, and the fur is usually thicker in tonsillitis than in any other infection of comparable severity.

While a furred tongue is common in mild respiratory infections, even in the absence of fever, in the case of other infections there was no tendency to produce furring unless there was a fever. Table IV shows the results for this group.

TABLE IV.—Other Infections (76 Cases)

	Without Fever	With Fever	Mouth Infections
Clean tongues ..	24 (53.3%)	1 (5.5%)	0 (0%)
Intermediate ..	12 (26.3%)	3 (16.6%)	2 (15.4%)
Furred tongues ..	9 (20%)	14 (77.8%)	11 (84.6%)
Totals ..	45	18	13
% of moderate and heavy smokers	20	11	30

These infections included urinary infections, bowel infections, septic fingers, boils, chicken-pox, and salpingitis. The effect of fever is quite clear, and was particularly well illustrated in 12 cases of chicken-pox. Of the seven feverish cases, six had furred tongues, while all five of the afebrile cases had clean tongues. Similarly, in 50 cases of measles seen since this investigation ended, 49 had furred tongues and all had a fever.

These results show that furring of the tongue can occur simply as a result of a fever, regardless of the cause, but that infections (other than of the respiratory tract) do not cause furring in the absence of fever.

There is, however, one exception to these findings, and that is infections of the mouth. There were 13 such cases (all afebrile), consisting of 11 cases of ulcerative stomatitis and two dental abscesses, and in none of these was the tongue clean. Dental decay, however, even when gross, was not found to produce furring of the tongue.

Non-infectious Illnesses

In the remaining cases there was no evidence that any non-infectious illness produced a furred tongue. This applied to diseases of the gastro-intestinal tract, in spite of the traditional belief that a coated tongue is a feature of gastro-

TABLE V.—Gastro-intestinal Diseases (94 Cases)

	Constipation	Peptic Ulcers	Gastro-enteritis		Other Abdominal Conditions
			Without Fever	With Fever	
Clean tongues ..	14 (53.8%)	7 (31.8%)	14 (58.3%)	0	12 (66.6%)
Intermediate ..	11 (42.3%)	11 (50%)	7 (29.2%)	1 (25%)	2 (11.1%)
Furred tongues	1 (3.9%)	4 (18.2%)	3 (12.5%)	3 (75%)	4 (33.3%)
Totals ..	26	22	24	4	18
% of moderate and heavy smokers	15	50	4	0	15

intestinal disease. Table V shows the results for the group of gastro-intestinal diseases. The figures for constipation are of particular interest, because a furred tongue is commonly supposed to be linked with constipation. Such is evidently not the case, and it may be in the common association of constipation with any feverish illness that the furred tongue is mistakenly linked with the constipation and not with the fever. The patients with constipation included in Table V were seen either for their constipation or for some non-infectious condition, and patients suffering from constipation during the course of an infectious illness were excluded from this list. All were questioned to confirm that they had true constipation and not merely an infrequent bowel habit.

Neither, on the other hand, was diarrhoea associated with a furred tongue, for in 24 cases of acute gastro-enteritis without fever a furred tongue was no more common than in the control group, but in four cases with fever a furred tongue was found in three.

In the case of the 22 patients who were seen for active peptic ulcers (either proved by a barium-meal examination or strongly suspected on clinical grounds) the proportion of intermediate and furred tongues was slightly higher than in the control group, in spite of the common teaching that peptic ulceration is associated with a clean tongue. This is probably due to the high (50%) proportion of smokers in this group of cases, as analysis of these 22 according to their smoking habits shows the following:

	No. of Cases	No. of Heavy and Moderate Smokers
Clean tongues ..	7	2
Intermediate ..	11	5
Furred tongues	4	4
	22	11

The remaining 18 cases in this group consisted of cases of carcinoma of the alimentary tract, gall-bladder disease, appendicitis, and various mild and temporary forms of indigestion. They are grouped together, not because they form a homogeneous group, but because the number of cases of each particular disease was too small to justify considering them separately. As a group, however, the incidence of furred tongues corresponded closely to the control group.

Thus there is no evidence that these disorders of the alimentary tract produce or prevent furring of the tongue, except indirectly through fever. Admittedly this paper deals only with a few common gastro-intestinal conditions, and it may be that there are other gastro-intestinal diseases that tend to produce a furred tongue even in the absence of fever, so that the tongue can then be regarded as a useful diagnostic sign. The most that can be said here is that there is

TABLE VI.—Other Conditions (140 Cases)

	Eye Diseases	Neuroses	Skin Diseases	Orthopaedic Diseases
Clean tongues ..	5 (71.4%)	12 (44.4%)	29 (54.7%)	32 (60.4%)
Intermediate ..	2 (28.6%)	9 (33.3%)	19 (35.9%)	15 (28.3%)
Furred tongues	0	6 (22.2%)	5 (9.4%)	6 (11.3%)
Totals ..	7	27	53	53
% of moderate and heavy smokers	0	22	20	26

no evidence that common disorders of the gastro-intestinal tract produce furring in the way diseases of the mouth, throat, or lungs produce furring.

Similarly, in orthopaedic diseases, neuroses, eye diseases, and skin diseases furring of the tongue occurred no more commonly than in the control group (Table VI), and in fact the proportions of clean, intermediate, and furred tongues are surprisingly constant in all these groups of diseases. The cases of furred tongue that do occur are mostly to be attributed to smoking.

Discussion

These results show that furring of the tongue is most common in infections of the respiratory tract, in fever, regardless of the cause, in local infections of the mouth, and in heavy smokers; there is no evidence that disease of the gastro-intestinal tract produces furring unless the disease happens also to cause a fever. In particular, there is no evidence of any connexion between constipation and a furred tongue. In the common non-infective conditions of general practice, such as orthopaedic diseases, neuroses, eye diseases, and skin diseases, there is likewise no evidence of any connexion with furring of the tongue.

The division between conditions causing furring and those not causing furring is not, however, hard and fast, for one comes across cases in the former group with clean tongues, and cases in the latter group with unexplained furring, and it may be that some people always have furred tongues, even though perfectly healthy.

Nevertheless, in most cases of furring of the tongue the cause of the furring is probably to be found in one of three conditions: local infection, a dry mouth, or the irritant effect of tobacco smoke. Local infection may come from the mouth itself (as in stomatitis), or from the nose or throat (as in tonsillitis, colds, and sinusitis), or from the lungs (as in bronchitis and pneumonia). Dehydration of the mouth may result from a general state of dehydration, or from the dry mouth of a fever, or from blocked nose, and smoking presumably acts by the direct irritant action of tobacco smoke on the tongue.

This means that furring of the tongue is produced by some local change from normal conditions, and not by a change in the condition of the stomach, large bowel, or any other internal organ. Thus the value of a furred tongue as a clinical sign is distinctly limited. Furring of the tongue is commonly mentioned, for instance, as a sign of some importance in the diagnosis of acute appendicitis, and during this investigation two patients were seen with acute appendicitis, and both of them had furred tongues, but both had fevers. I suspect that the common finding of a furred tongue in acute appendicitis is due to the fever rather than to the site of the infection, and in other diseases causing abdominal pain and a fever (such as urinary infections, mesenteric adenitis, or gastro-enteritis) a furred tongue is to be expected because of the common factor of the fever and therefore cannot be relied on as indicating the site of the disease.

So far as I am aware, the only similar survey of furred tongues is that undertaken by Gans (1954). He examined the tongues of 750 children and came to the conclusion that a furred tongue is of no significance. His results, which at first sight seem to be at variance with the results quoted here, are probably due to the fact that he was seeing the children at an out-patient clinic at a hospital. Since children do not (generally) smoke, most cases of furred tongues in children occur during the course of an acute infection, typically acute tonsillitis or one of the infectious fevers, or stomatitis, and it is unlikely that many of the children that attended Gans's clinic were suffering from an acute infection. Even those children with a history of a recent infection of the respiratory tract would not be expected to show an increased incidence of furring, for the fur on the tongue disappears soon after the temperature comes down to normal. There is, in fact, agreement between these conclusions and those of Gans's in that they emphasize the unreliability of a

furred tongue as a clinical sign in the chronic and non-infective diseases. In particular, we agree that there is no connexion between constipation and a furred tongue.

Summary

An investigation into the causes of a furred tongue has been undertaken.

Seven hundred patients who were seen in general practice provided the material for the investigation.

A furred tongue is usually due to smoking, to an infection of the respiratory tract, to a fever (regardless of the cause), or to an infection of the mouth.

Furring of the tongue is not connected with disease or disorder of the gastro-intestinal tract as such.

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REFERENCE

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THYROTOXIC COMA (APATHETIC CRISIS)

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Symptoms of irritability, restlessness, and mental instability occur in most cases of thyrotoxicosis, and in the late stages of the disease these disturbances may acquire a more serious character. A thyroid crisis may present as an acute delirium. In contradistinction to delirium, another form of disturbance has been described—thyrotoxic coma (Lahey, 1928; Crotti, 1938; Zondek, 1944). In this paper we describe the treatment of two such cases of coma in thyrotoxic patients recently admitted to the Royal Victoria Hospital. One case terminated fatally—as has been usual in this condition—the second patient recovered, after three days in coma, following intravenous therapy with adrenocortical extracts and chlorpromazine ("largactil").

Case 1

A male cleaner in a transport department, aged 53, was admitted to hospital on July 21, 1954, complaining of a loss of 2 st. (12.7 kg.) in weight during the previous twelve months. He stated that his pulse had become fast and that there had been a great increase in the degree of sweating. Despite the weight loss his appetite had increased and he "was always hungry." Several years previously he had noted the development of a goitre, which had got progressively larger and was now accompanied by some difficulty in swallowing and huskiness of the voice. During the week before admission he had become very "nervous" and irritable, with impairment of memory and concentration. Elucidation of the history was difficult, as he was very talkative, but his cerebration was slow and his memory for dates of the onset of the complaints poor.