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Statistical Evaluation of the Questionnaire about the Bad Breath (Halitosis) to the Patients and Attendances of Asahi University Hospital

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There is an increases tendency of the people who have consideration about bad breath year by year, and there is an increases tendency of the number of patient appealing for bad breath to come to the dental clinic, also.

At this time, we carried out the bad breath questionnaire and measurement at the same time for patients and attendants who visited Asahi University Hospital for the evaluation about a correlation between awareness of own bad breath and physical measurement of the bad breath.

The questionnaire was performed with bad breath measurement by the comprehensive reception hall of Asahi University Hospital every Saturday. The questionnaire was consists of 6 items such as age, sex, a presence of experience of consciousness of bad breath and pointed out of bad breath by others, and understanding about bad breath. After that, bad breath measurement and judgment were performed by the small semiconductor thick film (absorption effect transistor: AET) gas monitor.

In the results, the subjects were 200 people. The number of subjects who were judged as normal group in less than 250ppb of measurement value was 175. The number of subjects who were judged as mild-moderate group in over 250ppb of measurement value was 25. The number of mild-moderate group's subjects was high in the age group from 31 to 40 and from 41 to 50. In mild-moderate group, a ratio of subjects who has experiences of consciousness of bad breath showed the significant difference in comparison with normal group. In the understanding about bad breath, there were no significant difference between normal group and mild-moderate group.

In conclusion, the ratio of high measurement value of bad breath was increased with aging. And in the group of high bad breath value, there were many subjects who have an experience of consciousness of bad breath. And more, there were some differences of the understanding about prevention of bad breath between normal group and mild-moderate group.

Key words : Bad breath, Halitosis, Statistically study, Thick film semiconductor gas sensor

INTRODUCTION

There is an increases tendency of the people who have consideration about bad breath year by year, and there is an increases tendency of the number of patient appealing for bad breath to come to the dental clinic, also.

Bad breath as a disorder is called "Halitosis". Halitosis is classified as genuine halitosis, pseudo-halitosis and halitophobia. Genuine halitosis includes physi-

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ologic halitosis and pathologic halitosis. This kind of classification is useful for treatment of bad breath in clinic[1].

At this time, we carried out the bad breath questionnaire and measurement at the same time for patients and attendants who visited Asahi University Hospital for the evaluation about a correlation between understanding about bad breath and physical measurement of the bad breath.

MATERIALS AND METHODS

The questionnaire was performed with bad breath measurement by the comprehensive reception hall of Asahi University Hospital every Saturday, from 8: 30 AM to 0:30 PM, since May 10th to July 5th in 2003. We investigated patients or attendances as subjects who are agreed to questionnaire survey except the patient who visited hospital for the purpose of halitosis treatment.

First, the subject answered to a questionnaire. The questionnaire was consists of 6 items such as age, sex, a presence of experience of consciousness of bad breath and pointed out of bad breath by others, and understanding about bad breath (Table 1). After that, bad breath measurement was performed by the small semiconductor thick film (absorption effect transistor: AET) gas monitor (YOSHIDA Dental Trade Distr. Co., LTD. Tokyo, JAPAN) (Figure 1) [2,3]. This monitor is special device to measure volatile sulfur compounds (VSC), selectively. VSC is well understand that is main causative agent of bad breath[4]. According to this measurement device instruction manual, subjects were divided into normal group that is less than 250ppb, and mild-moderate group that is over 250ppb.

Table 1 : The questions contents of this questionnaire.

1. Age & Sex
2. Have you been conscious of bad breath so far?
・Yes ・No
3. When is it?
・At the time of getting up ・Before meal
・After meal ・At a time to sleep
・Menstruation ・Other
4. Have you had pointed out of bad breath by others?
・Yes ・No
5. What is the biggest cause of bad breath?
・Dental Caries ・Periodontal disease ・Aphtha
・Ulser ・Tongue coating ・Other
6. Please choose a thing to consider to be most effective in prevention of bad breath?
・Chewing gum ・Candy ・Mouthrinse ・Tablet
・Tooth brushing ・Tongue brushing ・Other

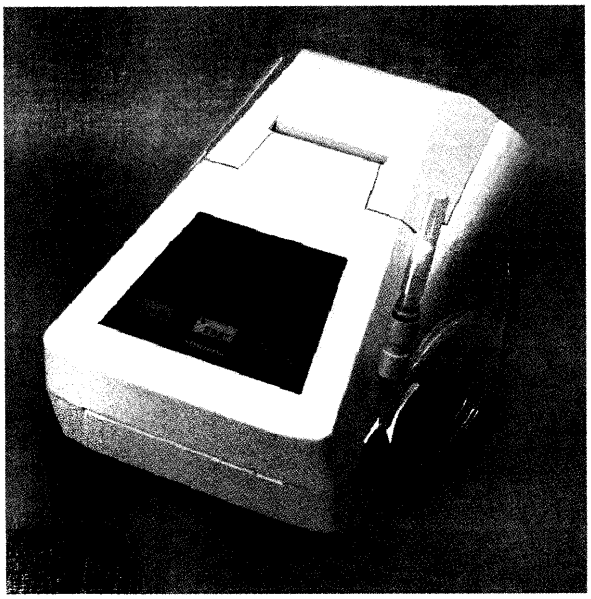

Fig. 1 : A thick film semiconductor (absorption effect transistor) gas monitor.

RESULTS

The age and sex distributions of 200 subjects were shown on figure 2. There were 112 females and 88 males. In the number of subjects, there were the most 40's. The measurement results of bad breath value were shown on table 2. The number of subjects of normal group was 175. And the number of subjects of mild-moderate group was 25. The age and sex distribution according to the bad breath values was shown on figure 3. The number of mild-moderate group's subjects was high in the age group from 31 to 40 and from 41 to 50. The number and ratio of subjects, who has experiences of consciousness of bad breath or pointed out of bad breath by others, were shown on table 3 and 4. The ratio of the subjects who has experiences of consciousness of bad breath was significantly high in mild-moderate group.

The results of questionnaire that are "When are you conscious of bad breath?" "What is a cause of

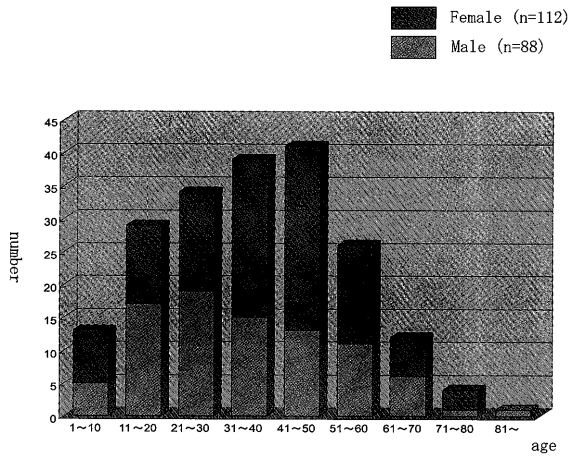

Fig. 2 : The age and sex distributions of 200 subjects.

Table 2 : The measurement results of bad breath value. (percentage among male or female, percentage in the whole)

Bad Breath Value	Male	Female	Total
Normal Group (less than 250ppb)	77 (87.5% 38.5%)	98 (87.5% 49.0%)	175 (87.5%)
Mild Group (250~600ppb)	7 (8.0% 3.5%)	9 (8.0% 4.5%)	16 (8.0%)
Moderate Group (600~1500ppb)	4 (4.5% 2.0%)	5 (4.5% 2.50%)	9 (4.5%)
Total	88 (100% 44.0%)	112 (100% 49.0%)	200 (100%)

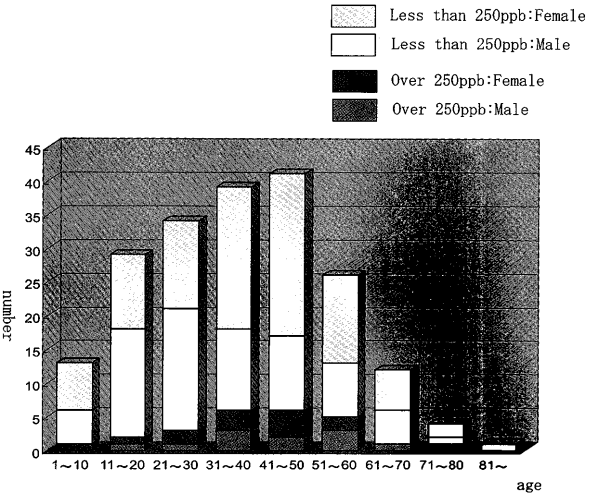

Fig. 3 : The age and sex distribution with the measurement results of bad breath value.

bad breath?" "What is effective in prevention of bad breath?" were shown on table 5, 6 and 7, respectively. And we compared mild-moderate group with normal group. In a question about time to be conscious of bad breath, there was no significant difference between both the groups. About a cause of bad breath, the answer was the same between two groups. In a question about bad breath prevention, most subjects answered tooth brushing and tongue brushing. Twenty-two percentage of the subjects of normal group answered chewing gum.

Table 3 : The number of subjects who were conscious of bad breath in normal group and mild-moderate group.

	Normal Group (n=175)	Mild-Moderate Group (n=25)
Self-consciousness	118 (67.4%)	23 (92%)
No Self-consciousness	57 (32.6%)	2 (8%)

(p=0.009)

Table 4 : The number of subjects who were pointed out of bad breath by others in normal group and mild-moderate group.

	Normal Group (n=175)	Mild-Moderate Group (n=25)
Pointed out by others	77 (44%)	14 (56%)
No Pointed out by others	98 (56%)	11 (44%)

(p=0.288)

Table 5 : The results of the question "When are you conscious of bad breath?"

	Normal Group (n=175)	Mild-Moderate Group (n=25)
At the time of getting up	43.8%	41.6%
Before meal	37.3%	31.2%
After meal	12.4%	16.8%
After tooth brushing	2.6%	2.6%
At the time of sleeping	1.3%	0%
Menstruation	1.3%	0%
Other	1.3%	10.4%

(p=0.235)

Table 6 : The results of the question "What is a cause of bad breath?"

	Normal Group (n=175)	Mild-Moderate Group (n=25)
Dental Caries	29%	20%
Periodontal Disease	51%	64%
Aphtha	3%	0%
Ulser	1%	0%
Tongue Coating	13%	8%
Other	3%	8%

(p=0. 076)

Table 7 : The results of the question "What is effective in prevention of bad breath?"

	Normal Group(n=175)	Mild-Moderate Group(n=25)
Chewing gum	22%	4%
Candy	2%	0%
Mouthrinse	13%	12%
Tablet	3%	0%
Thooth brushing	42%	56%
Tongue brushing	16%	28%
Other	2%	0%

DISCUSSION

According to the literature[5] which reported about measurements of bad breath value of civilian, the bad breath value becomes high according to age. In the result of this research, the measurement of bad breath value is increased with aging to a group of 50 years old. But that tendency is not recognized over 50 years old group. These results were coming from the reason that the number of subjects was small at this time. And we considered that there are some influences that we did this research at hospital.

In the result of the experiences of consciousness of bad breath, 92% of mild-moderate group's subjects have an experience of consciousness of bad breath. In normal group, 67.4% subjects have an experience of consciousness of bad breath. Between these ratio, there were significant difference with Fisher's exact test ($p \leqq 0.01$). But in the result of the experiences of pointed out by others of bad breath, there were significant difference between two groups. We considered that this result proves that the smell sense of bad breath is unstable[6]. Therefore, the date about the consciousness of bad breath and the pointed out of bad breath by other, do not have significant difference between two groups.

About the time to be conscious of bad breath, most of subjects answered "At the time of wake up" or "Before meal". However, it is generally said that bad breath is high when saliva outflow is a little, such as the time of getting up in the morning[5]. We described it above, a sense about a smell related bad breath is insecure.

About the understanding about prevention of bad breath, mild-moderate group's subjects answered "Tooth brushing" and "Tongue brushing" but normal group's subjects answered "Tooth brushing" and "Chewing gum". We considered that there are different point of understanding of bad breath in comparison between normal group and mild-moderate group. But there were no significant differences between two groups with Fisher's exact test.

CONCLUSION

We carried out questionnaire investigation and the measurement of bad breath value against 200 subjects and we could have the following things that became clear.

1. The ratio of high measurement value of bad breath was increased with aging.
2. In the high bad breath value subjects, there were many subjects who have an experience of consciousness of bad breath.
3. The consciousness of bad breath was insecure.
4. There were some differences of the understanding about prevention of bad breath between normal group and mild-moderate group.

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朝日大学歯学部附属病院の患者あるいは付き添いに対する口臭に関するアンケートの統計学的評価

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キーワード：口臭，口臭症，統計学的検索，半導体厚膜ガスセンサー

人々の口臭に対する意識は年々増加して来ている．また，口臭を主訴として歯科診療所を訪れる患者も増加している．

今回，朝日大学歯学部附属病院を訪れた患者あるいは付き添いに対し，口臭に対する知識に関わるアンケート調査と口臭測定を行い，統計的検討を加え評価を行った．

アンケート調査と口臭測定は，朝日大学の総合受付付近にて土曜日の午前中に行った．アンケートは，年齢，性別と口臭に対する知識に関する質問を含む6項目について行った．その後，半導体厚膜(AET)ガスセンサーを用い口臭測定を行った．

結果において，協力していただいた被検者は200名であった．口臭値が250ppb以下の普通と判断された被検者は175名，口臭値が250ppb以上の軽度から中等度と判断された被検者が25名であった．年齢別では，31から40歳と41歳から50歳の年代に口臭測定値の高い被検者が多かった．

口臭測定値の高い被検者には，口臭を自覚する被検者の割合が多かった．これは，口臭値の低い被検者のグループとの間に有意差を認めた．しかし，他人から口臭の指摘を受けた経験に関しては，両グループ間に有意差はなかった．

今回の統計学的評価において，口臭値は年齢とともに増加傾向を認めた．また，口臭を自覚する被検者の割合は，高い口臭値グループに有意に高かった．しかし，口臭という臭覚は，不確実であることも示唆された．

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