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An Epidemiologic Examination on the Prevalence of the Periodontal Diseases and Oral Pigmentation in Yusho Patients in 2002

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Abstract An epidemiologic examination was carried out to reveal the prevalence of the periodontal diseases and oral pigmentation in patients with Yusho.

The results obtained were as follows.

1) 95 patients out of 110 patients, who were examined periodontal pocket depth using Ramfjord' methods, had at least one tooth with periodontal pocket deeper than 3 mm. Similarly, 276 teeth out of a total 495 examined teeth showed periodontal pockets with more than 3 mm depth. However, the ratio of the teeth with periodontal pockets deeper than 4mm to total examined teeth in each age fell to less than 25%.

2) Oral pigmentation was observed in 75 patients out of 121 patients with Yusho. In this examination, gingival pigmentation was most predominant among oral pigmentation. It is of particular interest that severe pigmentation tended to be observed at a much higher frequency in younger patients with Yusho.

Taken these findings into consideration, it was suggested that PCBs and related compounds might play an important role in the development of both periodontal diseases and oral pigmentation.

Introduction

To investigate the effects of PCBs and related compounds on oral lesions, follow-up study had been carried out at the annual health examination for Yusho patients. As the results, it had been proved that oral pigmentation was one of the prominent features of oral lesions²⁾. In addition, many Yusho patients were demonstrated to be involved in marginal periodontal diseases¹⁾.

We reported here the prevalence of oral lesions, especially marginal periodontal diseases and oral pigmentation, in Yusho patients who visited the annual examination in 2002.

Methods

After asking chief complaint and a thorough dental history, visual examination, radiographic examination and also measuring of the periodontal pocket depth were

performed on Yusho patients who visited dentistry at the annual health examination at Fukuoka prefecture. The periodontal pocket depth at the mesio-buccal site of six teeth (upper right first molar, upper left central incisor, upper left first premolar, lower right first premolar, lower right central incisor and lower left first molar) was measured by use of the pocket probe (PCP-11) with light pressure and teeth with periodontal pocket deeper than 3mm were recorded.

Results

52 male patients and 69 female patients had the dental examination. Some patients complained of periodontal diseases such as gingival swelling, feeling of tooth extrusion, and also dentures not suitable for occlusion. However, no patients complained of esthetic problem caused by oral pigmentation.

Periodontal pocket examination carried out in 110 patients (48 males and 62 females) excluding patients who had no tooth for pocket examination. The distribution of periodontal pockets deeper than 3mm was shown in the Table 1. It was determined that 95 patients (86.4%) had at least one tooth with a periodontal pocket deeper than 3mm. In addition, 276 teeth out of total 495 examined teeth had a periodontal pocket deeper than 3mm (Table 2). Periodontal

pockets deeper than 3mm were most prevalent in the upper left first premolars followed by lower right first premolars, upper right first molars and lower left first molars in turn. As compared to premolars and molars, lower and upper central incisors seemed to show less prevalence of periodontal pockets deeper than 3mm in percentage. However, there were no definitive differences of prevalence among each tooth. A chronological examination revealed that prevalence of periodontal pockets deeper than 3mm was higher in the aged patients than that in the young patients (Fig. 1). Similarly, prevalence of periodontal pockets deeper than 4mm increased in the age related manner and 55 patients had at least one tooth with a periodontal pocket deeper than 4mm. However, only 83 teeth had a periodontal pocket deeper than 4mm (Fig. 1).

It was revealed that 75 patients out of a total of 121 examined patients were involved in oral pigmentation (Table 3). Although the prevalence of oral pigmentation in male patients seemed to be somewhat higher than that in female patients, no definitive difference between sexes was observed. A chronological examination showed that the prevalence of oral pigmentation in the patients of middle age was higher than that in patients above the ages

Table 1 Distribution of the teeth with periodontal pockets deeper than 3 mm by age group

Age	No. of teeth with PD \geq 3 mm		0		1		2		3		4		5		6		Total
	Sex		M	F	M	F	M	F	M	F	M	F	M	F	M	F	
<40	0*	3	1	1	1	1	0	0	2	0	2	1	0	0	0	0	12
40~49	0	1	0	1	0	1	0	1	3	0	0	0	0	0	0	0	7
50~59	1	2	3	3	1	3	2	2	0	1	4	0	2	1	1	25	
60~69	1	4	2	7	1	2	4	2	2	2	1	2	1	1	1	32	
70~79	2	1	4	5	1	4	5	1	0	1	0	4	1	1	1	30	
80~89	0	0	1	0	0	1	0	0	0	1	0	1	0	0	0	4	
Total	4	11	11	17	4	12	11	6	7	5	7	8	4	3	110		

PD \geq 3 mm : periodontal pocket deeper than 3 mm. M : male, F : female. * : number of patients.

Table 2 Prevalence of the teeth with periodontal pockets deeper than 3mm by tooth species

	tooth	16	21	24	44	41	36	Total
Male	NTPD	21	22	23	32	22	19	139
	NTET	31	34	35	43	37	33	213
	%	67.7	64.7	65.7	74.4	59.5	57.6	65.3
Female	NTPD	20	20	28	29	20	20	137
	NTET	39	47	47	57	52	40	282
	%	51.3	42.6	59.6	50.9	38.5	50.0	48.6
Total	NTPD	41	42	51	61	42	39	276
	NTET	70	81	82	100	89	73	495
	%	58.6	51.9	62.2	61.0	47.2	53.4	55.8

NTPD : number of the teeth with periodontal pockets deeper than 3 mm. NTET : number of the total examined teeth.

tooth ; 16 : upper right first molar, 21 : upper left central incisor, 24 : upper left first premolar, 44 : lower right first premolar, 41 : lower right central incisor, 36 : lower left first molar

of sixty (Fig. 2). Especially, severe oral pigmentation scored 2+ were observed almost in the patients of middle age but rarely in patients above the ages of sixty. On examination of localization, gingival pigmentation was observed at much higher frequency than pigmentation of the buccal mucosa and the lips, but pigmentation of the palate or tongue was not recognized (Fig. 3).

Discussion

The prevalence of teeth with periodontal pockets deeper than 3mm still remained to be high as reported previously³⁾⁴⁾⁵⁾⁶⁾. Chronological examination showed that the prevalence of periodontal pockets deeper than

3mm increase in the age dependent fashion but about half of the total examined teeth were involved in periodontal diseases even in the patients below the age of fifty. However, the ratio of teeth with periodontal pockets deeper than 4mm to total examined teeth in 2002 was about 16.8%, indicating destruction of the periodontal tissues was not severe. In general, systemic factors have not been suggested to be a primary cause of periodontal diseases. In Yusho patients too, of course, the plaque accumulation must be the chief cause of the marginal periodontal pocket development. Periodontal pocket depth might become shallow due to adequate tooth brushing and

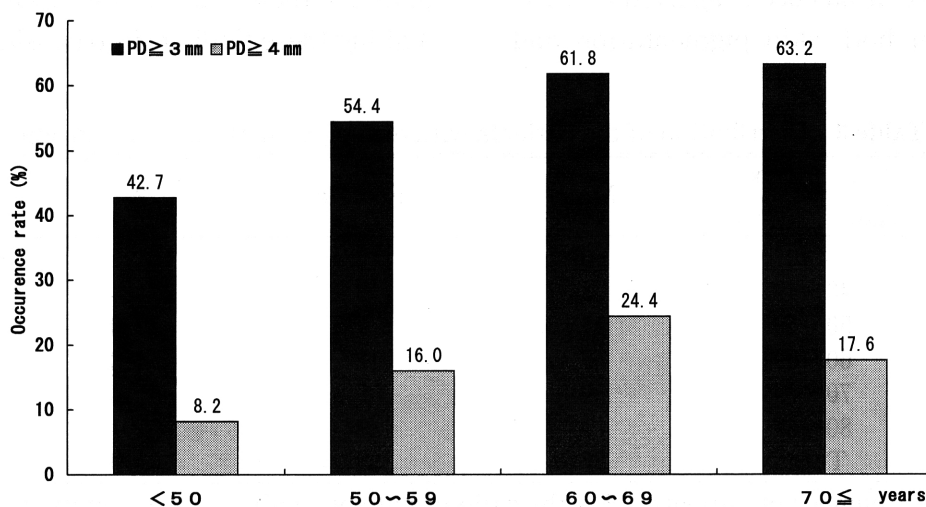


Fig. 1 Prevalence of the teeth with periodontal pockets deeper than 3 mm

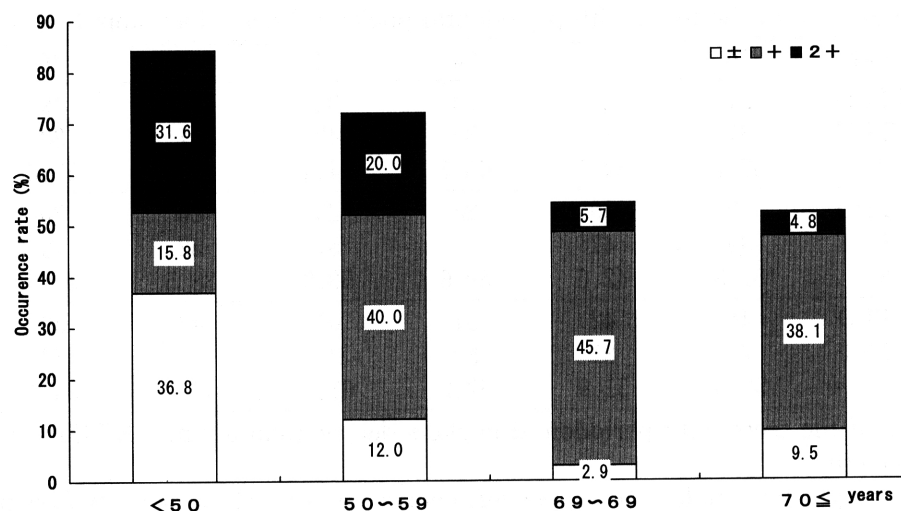


Fig. 2 Prevalence of oral pigmentation by age group

dental treatment such as tooth scaling and root planing. In this examination, however, it was revealed that persons of advanced age dominate among Yusho patients. As it is generally accepted that older people are more susceptible to bacteria and their by-products, oral care must become important more and more.

This examination showed that 61.9% of the Yusho patients suffered from oral pigmentation and the prevalence of oral pigmentation in male patients seemed to be somewhat higher than that in female patients. In accordance with the gradual decrease of the blood PCB concentration after exposure, it has been reported that the prevalence of both skin pigmentation and

conjunctival pigmentation have decreased over the years⁷⁾⁸⁾. Similarly, the prevalence of oral pigmentation had decreased until 1994⁵⁾. However, it had increased again and reached in the plateau between 1996 and 2002³⁾⁴⁾⁶⁾. The reasons for this discrepancy still remain unknown. Further research should be needed to reveal the mechanism of the development of oral pigmentation. A chronological examination demonstrated that the Yusho patients below the ages of fifty seemed to have a higher prevalence of oral pigmentation than those above the ages of sixty. The blood total-PCBs concentration in 2001 tended to be higher in the aged patients than that in the young patients. Taking these findings into consideration, we

Table 3 Distribution of the patients with oral pigmentation by age group

Age	Sex		%
	Male	Female	
<40	6*	5	91.7
40~49	3	2	71.4
50~59	11	7	72.0
60~69	7	12	54.3
70~79	9	9	51.4
80~89	1	3	57.1
Total	37	38	61.9

* : number of patients. % : the ratio of patients with oral pigmentation to total patients in each age group.

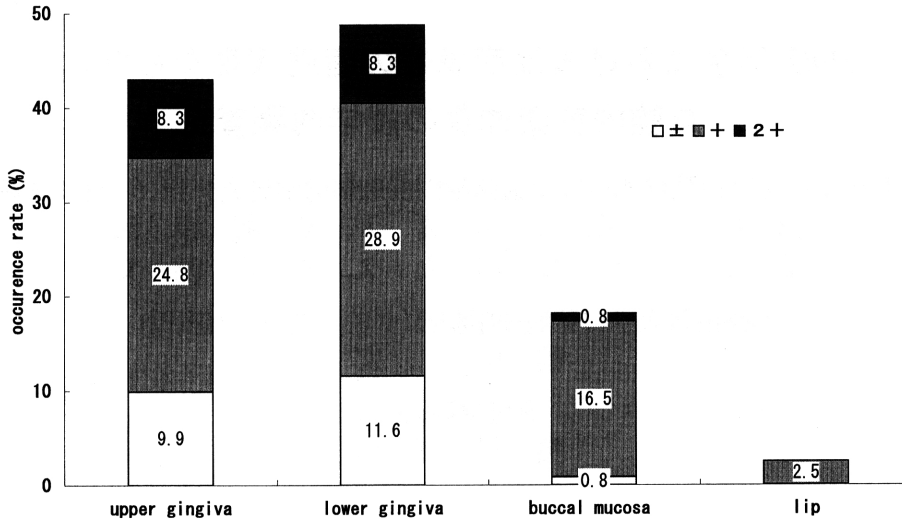


Fig. 3 Localization of oral pigmentation

supposed that PCBs might induce oral pigmentation, also effects of PCBs on oral pigmentation might be rather indirect than direct.

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(和文抄録)

2002 年度における油症患者の歯周疾患ならびに 口腔内色素沈着の疫学的調査

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油症患者における歯周疾患や口腔内色素沈着の罹患状況の経年的変化を把握するために、平成 14 年度の福岡県油症一斉検診を受診した油症認定患者を対象に口腔内診査を行った。

- 1) 深さ 3 mm 以上の歯周ポケットを 1 歯でも有している患者は 95 名 (86.4%) で、また 3 mm 以上の歯周ポケットを有する歯牙は 495 の総被検歯のうち 276 歯 (55.8%) といずれも高い割合を示した。
- 2) 121 名の油症認定患者のうち 75 名に口腔内

色素沈着がみられた。部位としては歯肉にみられるものがほとんどであった。加齢と共に色素沈着の発現率は低下しており、加えて色素沈着の程度も若年者に比べて高齢者の方が軽微であった。

以上の結果から、油症患者においては辺縁性歯周炎および口腔内色素沈着の罹患率が依然として高く、機序については不明だが PCBs やその代謝産物がこれらの病変の発症や進展に関与していると考えられる。