

Effect of periodontal therapy in *Actinobacillus actinomycetemcomitans*-associated periodontitis

A retrospective study with various microbiological detection methods

Language: English

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Introduction

Treatment of patients suffering from *Actinobacillus actinomycetemcomitans* (*A. a.*)-associated periodontitis aims to eliminate this microorganism. Recolonisation or persistence of *A. a.* after therapy has been considered as a risk factor for recurrent periodontitis.

Objectives

The purpose of this retrospective study was to evaluate the long-term microbiological and clinical effect of a combined mechanical and antibiotic treatment in *A. a.*-associated periodontitis.

Material and Methods

Patients

- 40 patients (28 female, 12 male)
- mean age at the beginning of the periodontal therapy 37 ± 9 years (from 20 to 59 years)
- inclusion criteria: aggressive or severe chronic periodontitis with microbiological proof of *A. a.*, mechanical debridement concurrent with systemic administration of antibiotics, microbiological re-evaluation after active periodontal therapy (not part of this study), follow-up of at least 12 months

Periodontal therapy

- Periodontal therapy was carried out in the Section of Periodontology, University of Heidelberg during the years 1992 to 2001, therapy comprised three sequential stages of treatment:
 - (1) Active therapy: supragingival professional cleaning and oral hygiene instructions, scaling and root planning (open or closed curettage) along with systemic administration of antibiotics (metronidazole plus amoxicillin/ciprofloxacin),
 - (2) Clinical and microbiological re-evaluation,
 - (3) Maintenance therapy (Recall):
- follow-up of 12-115 months (mean 38 ± 25 months).

Clinical examinations

- The clinical situation was assessed according to the probing pocket depth (PPD; 4 sites/tooth: db, b, mb, o). PPD were categorized into 3 groups (< 5 mm, 5-6 mm and > 6 mm).

Microbiological examinations

- Presence of *A. a.* after treatment was determined using two commercial DNA probes (IAI PadoTest 4.5®, Institut für Angewandte Immunologie, Zuchwil, Switzerland; DMDx/PathoTek®, ANAWA Laboratorien AG, Wangen, Switzerland) and culture on selective media (TSBV agar).

Bacterial sampling for the DNA probes:
Sterile paper points were inserted (for both tests simultaneously, Fig.1) in the deepest periodontal pocket in each quadrant; samples were pooled for the following analyses and immediately transferred to the respective laboratory.

Bacterial sampling for culturing:
At the same sites subgingival samples were taken with a sterile curette (Fig.2) and additionally from the right and left cheek as well as from the tongue with a sterile cotton bud (Fig.3).



Figure 1

Figure 2



Figure 3

Statistical analysis

- Descriptive analyses of the data (mean, standard deviation), statistical analyses with the Chi-square-test.

Results

Microbiological results

- Microbiological results revealed that A. a. was detected in 8 patients with at least one of the detection methods.
- The IAI PadoTest showed a positive result for A. a. in 7 and the DMDx in 2 cases (Tab.1).
- Two of these 8 patients (no. 6 and 17) had already a positive result for A. a. at the re-evaluation after active therapy. In only one patient (no. 19) A. a. could be detected with both DNA probes and the culture (Tab.1).

patient number	microbiological reevaluation	follow up	medication	IAI PadoTest 4.5®	DMDx/PathoTek®	culturing on TSBV-agar			
						right	check	left	check tongue sub.sample
1	-	101	Cipro/Metr -	-	-	-	-	-	-
2	-	35	Amox/Metr -	-	-	-	-	**	-
3	-	83	Amox/Metr -	-	-	-	-	-	-
4	-	33	Amox/Metr -	-	-	-	-	**	-
5	-	14	Amox/Metr -	-	-	-	-	-	-
6	+	22	Amox/Metr -	-	+	-	-	-	-
7	-	24	Amox/Metr -	-	-	-	-	-	-
8	-	47	Amox/Metr -	-	-	-	-	**	-
9	-	74	Amox/Metr -	-	-	-	-	-	-
10	-	20	Amox/Metr -	-	-	-	-	-	-
11	-	12	Amox/Metr -	-	-	-	-	-	-
12	-	115	Amox/Metr -	-	-	-	-	-	-
13	-	21	Amox/Metr +	-	-	-	-	**	-
14	-	12	Amox/Metr +	-	-	-	-	-	-
15	-	13	Amox/Metr -	-	-	-	-	-	-
16	-	21	Amox/Metr -	-	-	-	-	-	-
17	+	13	Amox/Metr +	-	-	-	-	-	-

18	-	17	Amox/Metr -	-	-	-	**	-
19	-	48	Amox/Metr -	+	-	+	-	-
20	-	31	Amox/Metr -	-	-	-	-	-
21	-	57	Amox/Metr -	-	-	-	-	-
22	-	64	Amox/Metr -	-	-	-	-	-
23	-	16	Amox/Metr -	-	-	-	-	-
24	-	82	Amox/Metr +	-	-	-	**	-
25	-	62	Amox/Metr -	-	-	-	-	-
26	-	16	Amox/Metr -	-	-	-	-	-
27	-	45	Amox/Metr -	-	-	-	-	-
28	-	19	Amox/Metr +	-	-	-	-	-
29	-	15	Amox/Metr +	-	-	**	**	-
30	-	17	Cipro/Metr -	-	-	-	**	-
31	-	34	Amox/Metr -	-	-	-	-	-
32	-	55	Amox/Metr -	-	-	-	**	-
33	-	32	Amox/Metr -	-	-	-	-	-
34	-	23	Amox/Metr -	-	-	-	-	-
35	-	59	Amox/Metr -	-	-	-	-	-
36	+	23	Amox/Metr -	-	-	-	**	-
37	-	16	Amox/Metr -	-	-	-	-	-
38	-	22	Amox/Metr -	-	-	-	-	-
39	-	16	Amox/Metr -	-	-	-	-	-
40	-	35	Amox/Metr +	-	-	-	-	-

Table 1: Microbiological results (**agars were overgrown with *Serratia spp.*)

Clinical results

- Improvement of the clinical situation was observed in all patients directly after therapy, resulting in a significant reduction of sites with PPD 5-6 mm and > 6 mm or more respectively and a significant increase of sites with PPD < 5 mm (p < 0,05; Fig.4 and 5).
- The clinical outcome was stable over the observation period without significant difference between patients with or without a posttherapeutical evidence for A. a. (Fig.4 and 5).

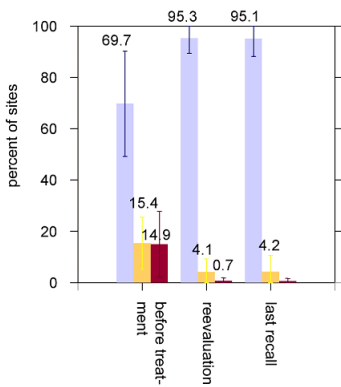


Figure 4: Clinical situation of the patients without an evidence for A. a. in the last recall (n=37)

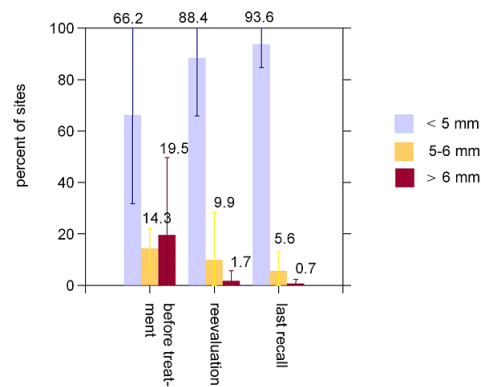


Figure 5: Clinical situation of the patients with an evidence for A. a. (n=3; no. 6, 17 and 19)

Conclusions

In conclusion, a combined mechanical and antibiotic therapy followed by a regular maintenance is effective to suppress A.a. over a mean period of 37 months, appropriate for improving the clinical situation, and in achieving long-term stability of periodontal health.

This Poster was submitted by Dr. med. dent. Bettina Dannewitz.

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- Maintenance therapy (Recall)
- follow-up: 12-115 months (mean 38±25 months)

Clinical examinations

- The clinical situation was assessed according to the probing pocket depth (PPD, 4 sites/tooth; db, b, mb, o). PPD were categorized into 3 groups (= 4 mm, 5-6 mm and ≥ 7 mm).

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Conclusions

In conclusion, a combined mechanical and antibiotic therapy followed by a regular maintenance is effective to suppress *A. a.* over a mean period of 37 months, appropriate for improving the clinical situation, and in achieving long-term stability of periodontal health.

Table 1: Microbiological results

patient no.	age	gender	microbiological re-evaluation	med. cases	culturing on TSBB-agar					
					IAI PadoTest A. a.	DMDx PathoTek	right cheek	left cheek	tongue	cotton bud
1	88	Female	+	+	+	+	+	+	+	+
2	36	Female	+	+	+	+	+	+	+	+
3	63	Female	+	+	+	+	+	+	+	+
4	33	Female	+	+	+	+	+	+	+	+
5	18	Female	+	+	+	+	+	+	+	+
6	27	Female	+	+	+	+	+	+	+	+
7	24	Female	+	+	+	+	+	+	+	+
8	47	Female	+	+	+	+	+	+	+	+
9	24	Female	+	+	+	+	+	+	+	+
10	20	Female	+	+	+	+	+	+	+	+
11	17	Female	+	+	+	+	+	+	+	+
12	119	Female	+	+	+	+	+	+	+	+
13	21	Female	+	+	+	+	+	+	+	+
14	72	Female	+	+	+	+	+	+	+	+
15	33	Female	+	+	+	+	+	+	+	+
16	21	Female	+	+	+	+	+	+	+	+
17	41	Female	+	+	+	+	+	+	+	+
18	32	Female	+	+	+	+	+	+	+	+
19	46	Female	+	+	+	+	+	+	+	+
20	21	Female	+	+	+	+	+	+	+	+
21	52	Female	+	+	+	+	+	+	+	+
22	44	Female	+	+	+	+	+	+	+	+
23	19	Female	+	+	+	+	+	+	+	+
24	62	Female	+	+	+	+	+	+	+	+
25	62	Female	+	+	+	+	+	+	+	+
26	16	Female	+	+	+	+	+	+	+	+
27	45	Female	+	+	+	+	+	+	+	+
28	15	Female	+	+	+	+	+	+	+	+
29	15	Female	+	+	+	+	+	+	+	+
30	35	Female	+	+	+	+	+	+	+	+
31	34	Female	+	+	+	+	+	+	+	+
32	55	Female	+	+	+	+	+	+	+	+
33	32	Female	+	+	+	+	+	+	+	+
34	23	Female	+	+	+	+	+	+	+	+
35	59	Female	+	+	+	+	+	+	+	+
36	23	Female	+	+	+	+	+	+	+	+
37	36	Female	+	+	+	+	+	+	+	+
38	22	Female	+	+	+	+	+	+	+	+
39	16	Female	+	+	+	+	+	+	+	+
40	35	Female	+	+	+	+	+	+	+	+

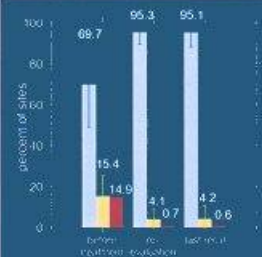


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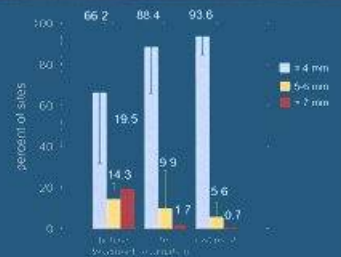


Figure 5: Clinical situation of the patients with an evidence for *A. a.* in the last recall (n=8, no. 6, 17 and 19)

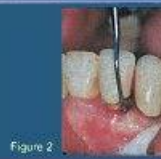
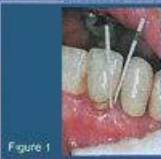


Figure 1

Figure 2

Figure 3

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