Periodontal diagnosis based on commonly used classifications

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DIAGNOZOWANIE W PERIODONTOLOGII NA PODSTAWIE AKTUALNYCH KLASYFIKACJI

Streszczenie
Podstawą prawidłowego postępowania leczniczego jest postawienie właściwego rozpoznania. Duże znaczenie mają powszechnie stosowane klasyfikacje jednostek chorobowych, które dzięki usystematyzowaniu objawów znacznie ułatwiają i przyspieszają prawidłową diagnozę.
Powszechnie uznaną i stosowaną klasyfikacją chorób przyzębia jest Klasyfikacja Amerykańskiej Akademii Periodontologicznej (AAP) z 1999 roku, uwzględniająca jako kluczowy parametr utratę przyczepu łącznotkankowego (CAL) i na jego podstawie oceniająca stopień zaawansowania choroby oraz postać – zlokalizowaną lub uogólnioną.
W 2008 roku Offenbacher i wsp. zaproponowali nowy podział chorób przyzębia opierający się na takich parametrach, jak głębokość kieszonki (PD) oraz krwawienie przy zgłębnikowaniu (BOP), z całkowitym pominięciem CAL, mający na celu przede wszystkim zweryfikowanie obecności lub brak aktywnego stanu zapalnego, którego wykładnikami są właśnie BOP i PD. Czy słusznie? W niniejszej pracy przeanalizowano badania periodontologiczne trzech pacjentów i porównano otrzymane rozpoznania w odniesieniu do obu klasyfikacji.
Ustalenie jednej, słusznej klasyfikacji spośród proponowanych dwóch jest zadaniem trudnym, a nawet niemożliwym, gdyż każda z nich jest niedoskonała i każda interpretuje diagram periodontologiczny względem innych aspektów. W celu pełnej oceny tkanek przyzębia naszych pacjentów, zasadne wydawałoby się zatem stosowanie obu klasyfikacji jednocześnie.

Słowa kluczowe: zapalenie przyzębia, klasyfikacja, utrata przyczepu

INTRODUCTION

The most fundamental for proper treatment is right diagnosis. Unspecific symptoms occur in many diseases, that is why differential diagnosis plays a highly significant role.

The use of classifications, which methodize disease symptoms, quickens and facilitates proper diagnosis.

Periodontal diagnostics is not easy to perform and it is based on exhaustive examination including not only teeth and periodontium but the whole stomatognathic system. It is also important to perform additional examination, e.g. radiological, microbiological and genetic or blood examination.

"Periodontitis" is not a full diagnosis and does not give any information about the course of treatment. According to G. C. Armitage (1) answering these questions should precede a definitive diagnosis:

– What is the patient's periodontal status?
– Is it acute?
– Is the disease localized or generalized?

It requires periodontal examination including evaluation of pocket depth, clinical attachment loss, plaque and bleeding index, root furcation status and teeth looseness. Unfortunately, dentists rarely perform such examination and impede or even preclude right diagnosis and proper treatment.

Let's analyze the two basic periodontal parameters defining the diagnosis.

PD – pocket depth – the distance between the gingiva margin and the pocket bottom (the surface of the attachment)

CAL – clinical attachment loss – the distance between the pocket bottom and the cementoenamel junction (CEJ) (2).

It is possible to observe different situations:
– When the gingiva margin is located over the cementoenamel junction level (CEJ is invisible) – fig. 1
– When the gingiva margin is located on the same level as cementoenamel junction – fig. 2
– When the gingiva margin is located under the cementoenamel junction level, there is a gingiva recession (CEJ is visible) – fig. 3

PD evaluation is not a challenge, while the CAL evaluation may be difficult, especially when the cementoenamel junction is not yet visible (PD > CAL). Figure 4 shows such situation and helps to provide proper CAL measurement.

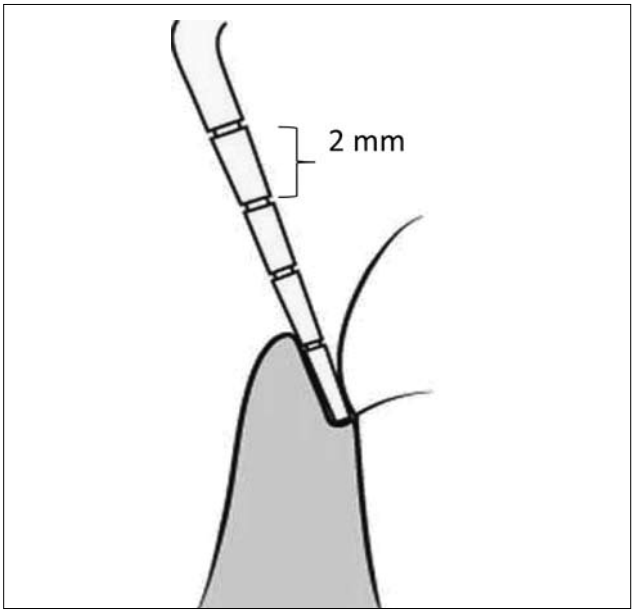

Fig. 1. PD = 0, CAL = 0.

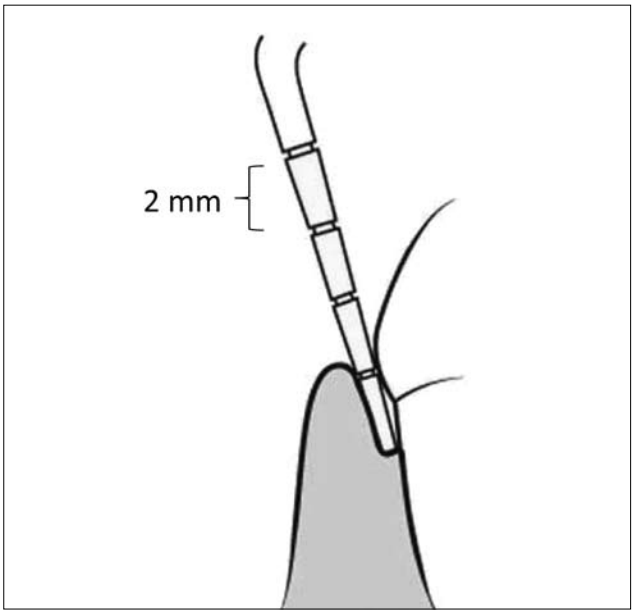

Fig. 2. PD = 2, CAL = 1.

PD and CAL are the most important points of reference applied in two commonly used classifications.

The most frequently used one is the American Academy of Periodontology classification (1999). Its main disease division consists of gingivitis, chronic periodontitis, aggressive periodontitis, periodontitis concomitant with general diseases, acute periodontitis muco-gingival abnormalities (2, 3).

The criteria which differentiates gingivitis and periodontitis is clinical attachment loss caused by bone destruction due to chronic inflammation. CAL is also a key factor classifying the severity and form of periodontitis.

Following the AAP, we distinguish different stages of chronic periodontitis:
– light (CAL – 1-2 mm)
– moderate (CAL – 3-4 mm)
– severe (CAL > 5 mm)

and two forms of chronic periodontitis:
– localized (CAL present in less than 30% examined surfaces)

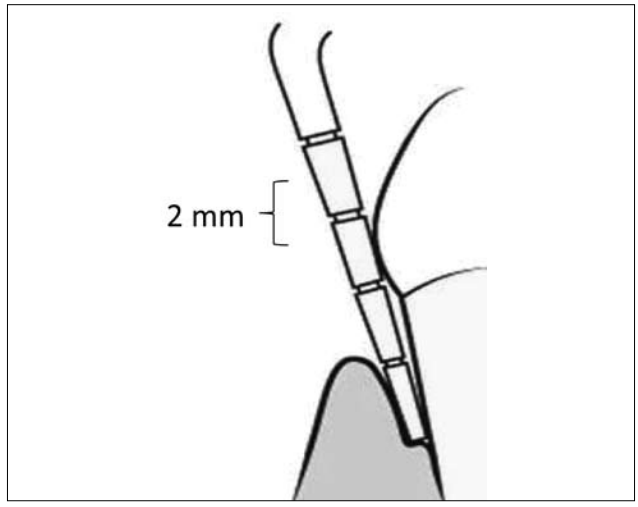

Fig. 3. PD = 2, CAL = 4.

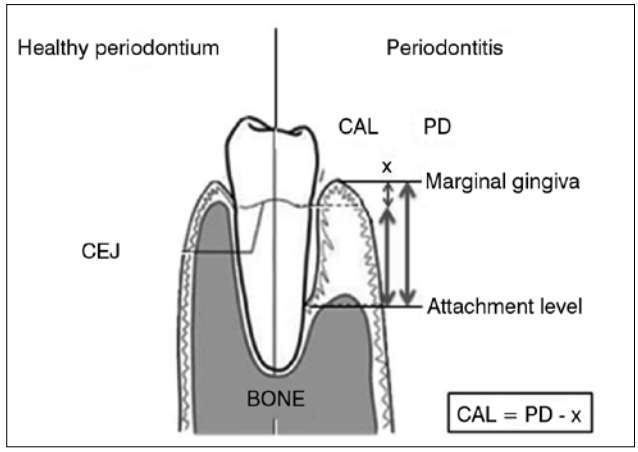

Fig. 4. CAL evaluation, when pocket depth value i higher than attachment loss and the cementoenamel junction is sightless.

– generalized (CAL present in 30% and more examined surfaces)

The AAP classification also includes the etiology which allows to differentiate the disease between chronic, aggressive and periodontitis concomitant with general diseases – when the clinical attachment level is present or between gingiva diseases if there is no clinical attachment loss.

In 2008 Offenbacher and co. suggested a new periodontitis classification. Due to an epidemiologic study undertaken in 6700 patients, the analyze of inflammation markers, immune response characteristics and according to the biological interface, it distinguished five periodontium conditions, ranging from "healthy" to the most diseased one. The most important parameters were PD and BOP (4). Those five conditions were created as biofilm – gingival interface:

– BGI-H – (biofilm-gingival interface: healthy)
PD ≤ 3 mm, BOP < 10%
– BGI-G – (biofilm-gingival interface: gingivitis)
PD ≤ 3 mm, BOP > 10%
– P1 – (biofilm-gingival interface: deep lesion/low bleeding)
PD ≥ 4 mm, BOP < 10%
– P2 – (biofilm-gingival interface: deep lesion/moderate bleeding)
PD ≥ 4 mm, 10% < BOP < 50%
– P3 – (biofilm-gingival interface: deep lesion/severe bleeding)
PD ≥ 4 mm, BOP ≥ 50%

Those five conditions are not disease entities and do not correspond with the traditional classification, in turn they verify the presence of active inflammation which key factors are BOP and PD > 4 mm. Offenbacher in his new classification excludes CAL. Is this justifiable? Let's analyze it clinically, compare the diagnosis and the treatment procedures according to both classifications.

Following charts show periodontal examinations of patients treated in the Department of Periodontology and Oral Diseases medical University of Warsaw. The measures were taken in 4 points (buccally: distally, centrally and medially and palatally).

Case 1 concerns a patient whose examination revealed 79% of teeth surfaces with dental plaque (76 out of total 96), PI = 79%. Such high plaque index should be already alarming. Bleeding on probing was found out in 56% of measured points (54 out of 96), so BOP = 56%. The PD and BOP values are – as already mentioned – key factors for diagnosis. As the chart shows, there are points were clinical attachment loss reaches 8mm. Mean CAL, found in 87% of measured points was 2,26 mm.

Basing on the AAP classification, the stage of periodontitis is set up according to incidence of CAL, even if it was present only in one measurement point. There are no doubts, that in this case the diagnosis would be generalized, severe periodontitis. According to Offenbacher's classifications, this patient would be diagnosed as BGI-P3 (PD > 4 mm, BOP > 50%). In this case, both classifications support severe periodontitis bearing immediate treatment. Even though the clinical attachment loss of the distal surfaces of 17 and 27 is caused by the lack of lower supportive teeth, PD measurement revealed pockets deeper than 5 mm, which means active inflammation and periodontal treatment needs.

The second chart presents a patient with dental plaque identified on 15 out of 96 six examined surfaces (PI = 16%) and no bleeding on probing (BOP = 0%). The clinical attachment loss (highest value = 1 mm) was revealed in 10 measurement points (10,5%), the PD values ranged from 1 to 2 mm.

According to Offenbacher, this patient would be classifies as BGI-H, meaning healthy. On the other hand, due to CAL presence the AAP classification would diagnose this case as localized light periodontits.

The third chart presents a patient with PI = 25%, BOP = 10% and highest PD values 3mm. CAL values range from 2 to 7 in all of examined surfaces. This patient has so-called "recuded periodontium" – destroyed by long-lasting inflammation.

In this case, the AAP classification diagnosis – generalized severe periodontitis seems legitimate. According to Offenbacher and lack of active inflammation the diagnosis would be BGI – H, healthy (PD < 4 mm, BOP = 10%)

DISCUSSION

The measurement of clinical attachment loss is an important and comparable periodontal parameter, as it allows estimating periodontal status regardless of inflammation. The pocket bottom and cementoenamel junction are explicit referential points, unlike the gingiva margin, which depends on actual inflammation conditions. This is why the AAP assigned CAL as the basis of diagnosing periodontitis. By contrast, Offenbacher uses inflammation indicators.

The AAP classification does not refer to inflammation indicators such as PD and BOP, while presence of CAL is tantamount to periodontitis, which is sometimes exaggerated (case 2). On the contrary, Ofenbacher does not refer to CAL – if only PD does not exceed 4 mm and BOP – 10%, the patient is classified as healthy while actually should be named "doesn't require treatment", since diagnosing case 3. as healthy would be inappropriate.

Diagnosis made basing on the AAP classification is rather "bookish", while the Offenbacher classification gives a pragmatic approach and above all it is concentrated on treatment needs, revealing the presence of active periodontitis and necessity of immediate help. This classification seem simpler and more practical (PD and BOP measurements are quite easy, while CAL estimating requires more experience and prolongs the examination). Also, the results illustrate directly the necessity of periodontal treatment. Moreover, as it is shown in the presented cases, the AAP classification may be misleading – diagnosing periodontitis based only on clinical attachment loss does not tell anything about the phase of the disease. CAL = 1, 2 or even 8 mm may be present

in patients with active periodontitis as well as in remission, thus it is not a clear answer concerning future treatment. On the other hand, the classification suggested by Offenbacher is imprecise – though it clearly reveals the presence of active inflammation, it does not take into consideration the etiology od the disease, which is extremely important as well as previously treated periodontitis.

Both classifications do not answer the three questions asked by Armitage. The AAP classification seems to refer more precisely to question 1, concerning the periodontium status and question 3, concerning the extent of the disease. By contrast, Offenbacher concentrates on the activity of inflammation, which may give answer to question 2. It seems tough or even impossible to determine one proper classification, as both of them have disadvantages and both interpret a chart according to different aspects. In fact, the clinicians do not treat charts, but patients. For a complete diagnosis, it seems legitimate to use both classifications at the same time. □

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