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IP Indian Journal of Conservative and Endodontics

Journal homepage: www.innovativepublication.com

Original Research Article

Abidjan dentists' knowledge of the current guidelines for the management of cardiopathic patie nts during endodontic treatment

Akpé Jonas Adou[1,*], Koboh Sylvie Atsé-N'guessan[2], Marie Adou-Assoumou[1], Jean Ndré[1], Aline A. Krah-Sinan[1], Joseph Mokiya[1]

[1]*Dept. of Restorative Dentistry, OdontoStomatology Faculty, Félix Houphouët Boigny University,, Cocody, Abidjan, Côte d'Ivoire*
[2]*Dept. of Pathology, OdontoStomatology Faculty, Félix Houphouët Boigny University, Cocody, Abidjan, Côte d'Ivoire*

ARTICLE INFO

Article history:
Received 28-02-2020
Accepted 30-04-2020
Available online 25-05-2020

Keywords:
Abidjan
Cardiac patients
Endodontic treatment

ABSTRACT

Background: Longer lifespans and advances in medicine have been matched by an increase in the prevalence of patients at risk of infection who are likely to receive endodontic treatment.
Aim: The aim of this study was to evaluate the knowledge of Abidjan practitioners about the current guidelines for the management of cardiopathic patients during endodontic treatment.
Methods and Materials: This is a descriptive cross-sectional survey, which involved interviewing 145 dentists. The questions focused on the different types of heart disease and the indications or contraindications of endodontic therapy for the treatment of irreversible pulpitis. The questionnaire was calibrated and validated by the Scientific Committee of the Faculty of Odontostomatology in Abidjan (Côte d'Ivoire).
Results: More than 50% of practitioners are unaware of the contraindications for endodontic treatment in the cardiopath. When endodontic treatment is indicated, practitioners do not apply recommendations such as treatment in one session (more than 50%), and antibiotic prophylaxis limited to 1h before treatment (75.17%). Finally, 26.21% of respondents do not find it necessary to establish a dialogue with the general practitioner.
Conclusion: A low level of knowledge of the current guidelines was found among Abidjan dentists. Therefore, attempts should be made to teach the current guidelines in Abidjan undergraduate/postgraduate dental education.

1. Introduction

For a long time, the oral cavity has been considered the main bacterial gateway for many focal infections to other sites of the human body.[1] This has led to radical interventionist attitudes and a renunciation of endodontic care, most often unjustified.[2,3] Since then, these drifts have been corrected, the risk of focal infection of oral origin has been put into perspective and in the vast majority of cases, dental care in general and endodontics, in particular, are possible in patients with an infectious risk linked to a or several general pathologies.[4]

However, in recent years, epidemiological and experimental investigations have highlighted an association between patients poor oral health and their poor general health.[5–7] Thus, dental and periodontal pathogens are now considered a risk factor among others such as smoking, overweight, physical inactivity and age.[8,9]

Endodontic treatment with instrumental maneuvers if not performed properly may cause the release of microorganisms. These germs pass into the blood or lymphatic circulation and attach to the endocardium.[6]It is the focal infection at the dental gateway.

In the heart, germs cause complications such as infective endocarditis.[10] Bacterial endocarditis occurs in about a third of cases in subjects presumed healthy, outside gestures,

* *Corresponding author*.
E-mail address: adou_akpe@yahoo.fr (A. J. Adou).

https://doi.org/10.18231/j.ijce.2020.012

which pleads for a global prevention, especially oral, adapted to the whole population.[11] On the other hand, carrying out gestures liable to cause bacteremia in cardiac patients known to have endocarditis is a risky situation.[12,13]

The dental surgeon's preventive approach to IA consists of avoiding spontaneous bacteremia by suppressing dental infectious foci and in combating bacteremia caused by antibiotic prophylaxis.[14–18]

Unfortunately, most of the previous studies conducted in other countries have shown a lack of consistency in the knowledge and practice of dentists in the management of cardiac patients.[19–21]

The objective of this study was to assess the knowledge of practitioners in the Abidjan district on current guidelines for the endodontic management of heart patients.[2]

2. Materials and Methods

A self-administered questionnaire was distributed to a representative sample of dentists in Abidjan between April and June 2019. The sample was selected from dentists practicing in private, public and university hospitals using a convenience sampling method. The information sought included demographics of the respondents, awareness of the current guidelines which was based on the consensus opinion of experts on preventing infective endocarditis and sources of knowledge regarding that guidance. The questions were focused on the different types of heart disease and the indications or contraindications of endodontic therapy for the treatment of irreversible pulpopathies.

Data analysis was done using SPSS for Windows (12.0 version, Chicago, IL). Descriptive statistics and tests of significance ($p \leq 0.05$) were used as appropriate.

3. Results

The time since graduation from dental school ranged from 1 to 26 years (mean 11 years). Most respondents (79%) were trained in Abidjan. More than 50% of respondents do not participate in continuing education. All the respondents wanted to participate in continuing education on the management of heart disease.

Only 123 respondents (80%) knew about heart disease, and the most common source of this knowledge was their initial training (Table 2). Almost all respondents reported knowledge of Infective Endocarditis (96%) and focal infection (97%).

One Hundred Twenty Three (123) respondents (80%) indicated that they were aware of the current Infectious Endocarditis Prevention Guidelines, and the most common source of this knowledge was their pre-service training (Table 2).

Fifty-two (52%) percent of respondents were unaware of high-risk heart disease (Group A) and lower-risk heart disease (Group B) (Table 2). 50% of the practitioners were not aware of the contraindications of endodontic treatment in cardiopathy. When endodontic treatment was indicated, practitioners did not apply recommendations such as treatment in one session (Table 3), and antibiotic prophylaxis limited to 1 hour before treatment (75.17%).

Finally, 26.21% of the respondents did not find it necessary to establish a dialogue with the general practitioner (Table 2).

4. Discussion

Our sample is made up of 145 dentists. Men represent 64.83% against 35.17% of women, a sex ratio of 1.84 in favor of men. (Table 1). Most of the dentists surveyed practiced in the private sector (66.90%) (Table 1). These findings may be linked to an uneven distribution of survey sheets.

Regarding knowledge regarding the management of heart disease in endodontics, most of the respondents 84.83% (Table 1) said that they had received notions during their initial training. With regard to IEs and RUs, almost all (90% of the dental surgeons surveyed) admit having received training for this purpose. (Table 2). However, more than 50% of practitioners are unable to distinguish a heart patient from group A and group B. (Table 2). Our results agree with those of Kazuma et al. who had shown in their study that in pediatric dentists in Japan, it was difficult to identify which cardiac diseases are at high risk for AE, probably due to a lack of training in cardiology.[22]

Concerning the international recommendations on antibiotic prophylaxis for AE, our study revealed that more than three quarters (3/4) of the respondents do not know these recommendations (Table 2). This could be due to the modalities of prescription which remain little particular. In fact, it is recommended that a prescription for an antibiotic be made one hour before the procedure at a rate of 3g per os in a single dose.[23] For patients weighing less than 60kg, this is reduced to 2g per os, one hour before treatment in a single dose. This, therefore, makes it possible to maintain a high serum concentration and good digestive tolerance. Our results are largely disproportionate compared to those of Errahmouni[7] who noted that only half of the dentists in the city of Marrakech knew the antibiotic prophylaxis of the IS, contrary to 24.8% noted in our study. Adeyemo et al. also made the same observation in Nigeria. They observed a low level of knowledge of current guidelines among dentists for antibiotic prophylaxis for AE.[19]

Most of the molecules recommended for the antibiotic prophylaxis of AE are from the β-lactam family (Ex: Amoxicillin). In our study, out of 36 practitioners, only 25 practitioners (71.72%) prescribed β-lactams in accordance with the recommendations (Table 2). This result is close to that of Errahmouni which collected 74% of its sample.[20] In addition, the study carried out by Kapitchet in 2017 on the

Table 1: Characteristics of the respondents

	Frequency	(%)
Gender : Male	94	(64.8)
Female	51	(35.1)
Year of Graduation $>$ 2010	67	(46.2)
School of Graduation: UFR/OS Abidjan	114	(78.6)
Job sector : Private	97	(66.8)
Public	48	(33.1)
Source of knowledge : Undergraduate education	123	(84.8)

Table 2: The proportion of correct responses for each item for the question

Knowledge	Yes/No	Total Number	(%)
Infectious endocarditis	Yes	139	(95.8)
Focal infection	Yes	141	(97.2)
Group A et Group B	No	75	(51.7)
Antibiotic prophylaxis	Yes	36	(24.8)
Prescription of β-lactams (Amoxicillin)	Yes	25	(71.7)
Antibiotic prophylaxis 1 hour before endodontic treatment	No	109	(75.1)
Dialogue with the general practitioner.	No	38	(26.2)
Indications and contraindications for endodontic treatment	No	73	(50.3)
Application of consensus recommendations	No	73	(50.3)

Table 3: Evaluation of endodontic procedures

Procedures	Yes/no	Total / No	(%)
Use of the dike	Yes	12	(08.2)
Use of apex locator	Yes	11	(07.5)
Manual preparation technique	Yes	139	(95.8)
Compressive obturation technique	No	116	(80.0)
Endodontic treatment in 1 session	Yes	26	(17.9)

prescription of antibiotics in endodontics showed a higher rate (98.20% of prescriptions).[11]

Carrying out endodontic care in heart patients is very complex. In group A patients endodontic care should be exceptional. They can only be carried out after verification of the vitality of the tooth by appropriate tests. In addition, care must be carried out under a dike, in a single session, with an apex locator while being sure that all of the canal lumen is accessible. In any event, the idea of carrying out the treatment in a single session responds to a principle of minimizing the risks of colonization and/or recolonization of the endodont by microorganisms.

Out of 81 practitioners who perform endodontic treatment, only 28 do so in a single session (Table 3). However, this treatment should be reserved for monoradiculated teeth and, if necessary, the first premolar if both channels are accessible.[23] All these precautions are necessary to work in an aseptic environment and avoid introducing germs into the periapex.

When evaluating endodontic procedures, our study found that almost all practitioners (92%) did not use a dam or apex locator (Table 3). Most dentists (95.80%) used manual canal preparation techniques and 80% performed canal filling with the non-compressive technique (Table 3). However, it has been proven that these techniques do not guarantee the seal sought during endodontic treatment. Indeed, with manual canal preparation techniques, the major risk of bacteremia is located during the initial phase of treatment: when the instruments seeking to reach the working length through a channel whose taper has not been established, entrain and pack bacteria in an apical situation or even propel them in an extra-radicular situation. This risk persists during shaping in the absence of adequate hypochlorite irrigation and during obturation in the event of non-compliance with the apical limits.

With the development of new techniques of corono-apical preparation in continuous rotation such as ”pressure-less/crowndown”, it is possible to prevent these incidents and the risks of bacteremia, which result from them. However, whatever the operator’s vigilance, insofar as the canal must be cleaned up to the foramen while maintaining the apical patency, it is impossible to avoid even minimal instrumental overshoot and to exclude a foraminal crossing of bacteria.

5. Conclusion

The practice of endodontics cannot be conceived outside the medical context of the patient. This first determines the indication or contraindication for therapy, regardless of the feasibility and prognosis of endodontic treatment, depending on local factors.

When endodontic treatment is indicated, compliance with consensus recommendations and the application of good practice standards are essential for the practitioner to prevent infectious complications that can be life-threatening. Thus, the limits and biomechanical requirements of endodontic treatment argue in favor of antibiotic prophylaxis in patients at risk of infection from a distance.

Our study has shown that few dental surgeons know the precautions to be taken during endodontic treatment in heart patients. Better still, the practical situation showed that in reality, almost all of the practitioners interviewed found it difficult to correctly apply the prescribed recommendations

6. Source of Funding

None.

7. Conflict of Interest

None.

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Author biography

Akpé Jonas Adou Professor

Koboh Sylvie Atsé-N'guessan Dentists

Marie Adou-Assoumou Professor

Jean Ndré Dentists

Aline A. Krah-Sinan Professor

Joseph Mokiya Dentists

Cite this article: Adou AJ, Atsé-N'guessan KS, Adou-Assoumou M, Ndré J, Krah-Sinan AA, Mokiya J. **Abidjan dentists' knowledge of the current guidelines for the management of cardiopathic patie nts during endodontic treatment**. *IP Indian J Conserv Endod* 2020;5(2):44-47.