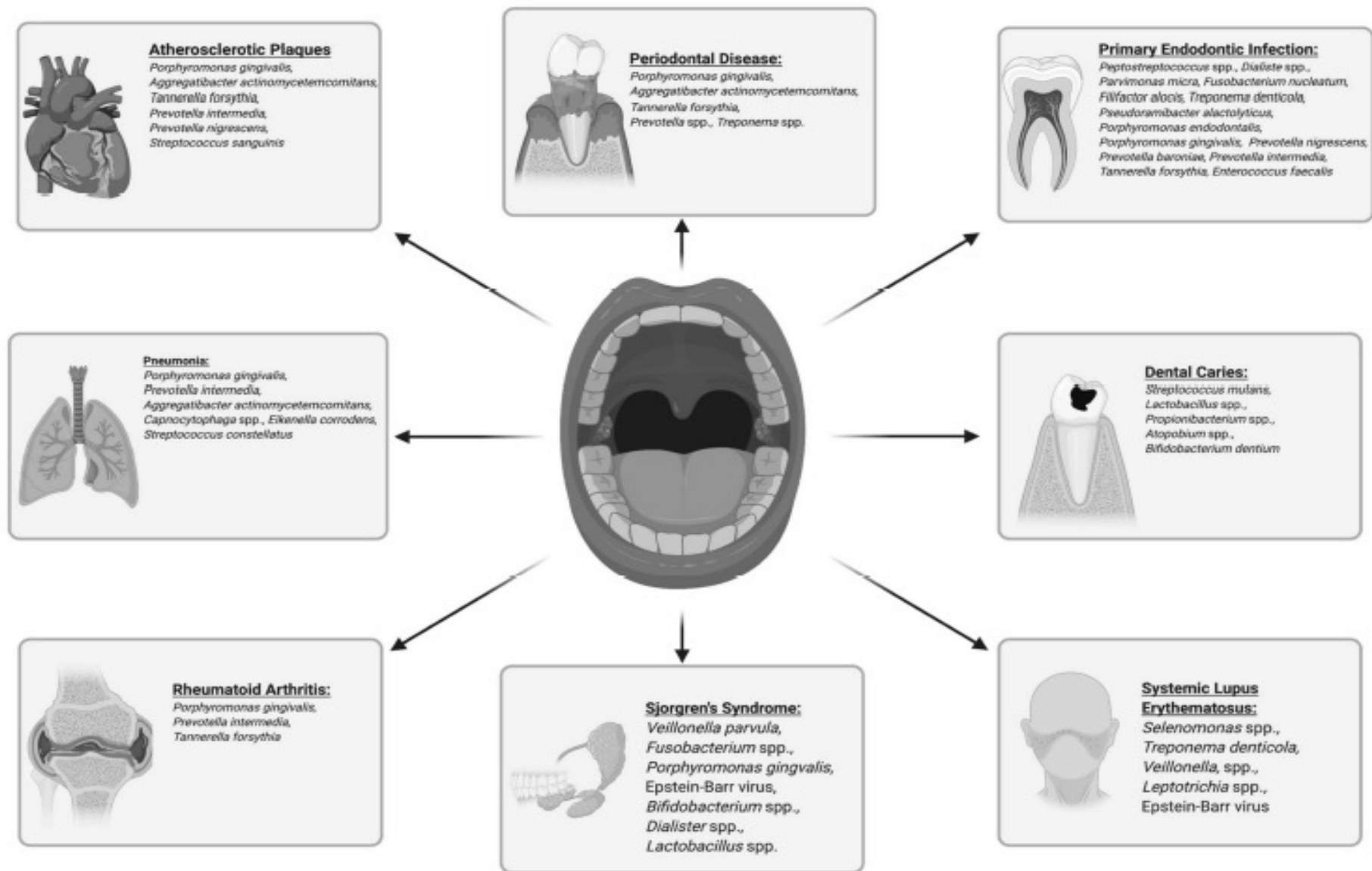


CUORE E PARODONTOPATIE

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PARODONTITE E MALATTIE SISTEMICHE



INTRODUZIONE

Esiste una associazione tra malattie cardiovascolari e parodontopatie ?

Esiste anche una relazione causale ?

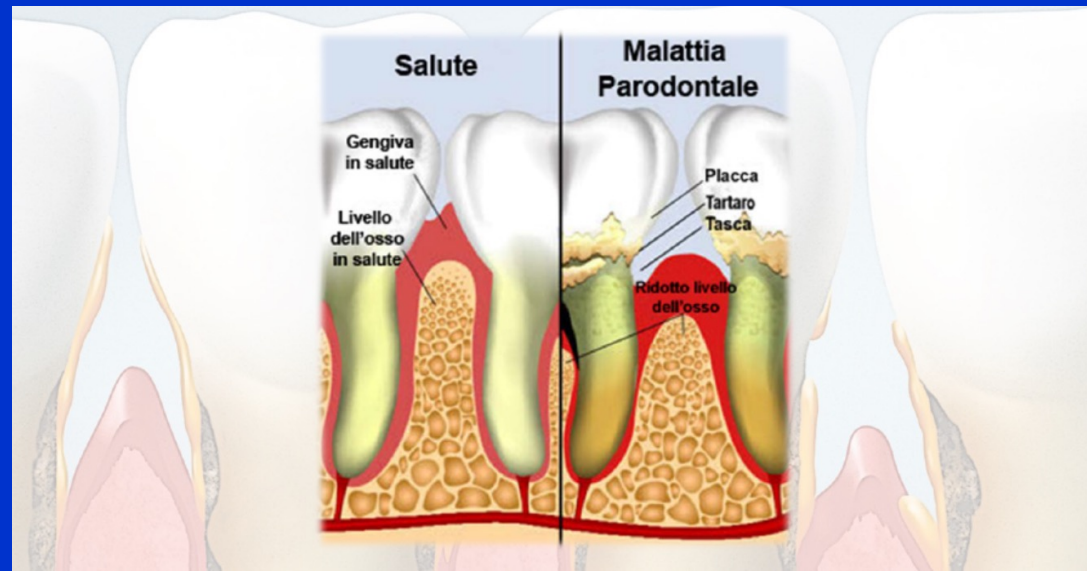
Quali sono i possibili meccanismi fisiopatologici ?

Quali sono gli effetti della terapia delle parodontopatie a livello cardiovascolare ?

Quali sono gli effetti della terapia cardiovascolare a livello delle parodontopatie ?

Gestione della terapia cardiologia nelle procedure odontoiatriche

Parodontite e chirurgia:
screening preoperatorio
complicanze post-chirurgiche



PREVALENZA



The prevalence of periodontitis is reported to be between 20 and 50% of the worldwide population.

In Europe, the prevalence estimates seem not to differ from those reported in the USA with the more severe forms of periodontitis (aggressive) limited to a small proportion (10%) of the population.

Periodontitis patients have a about 15 % increased risk of developing cardiovascular diseases.

FATTORI DI RISCHIO

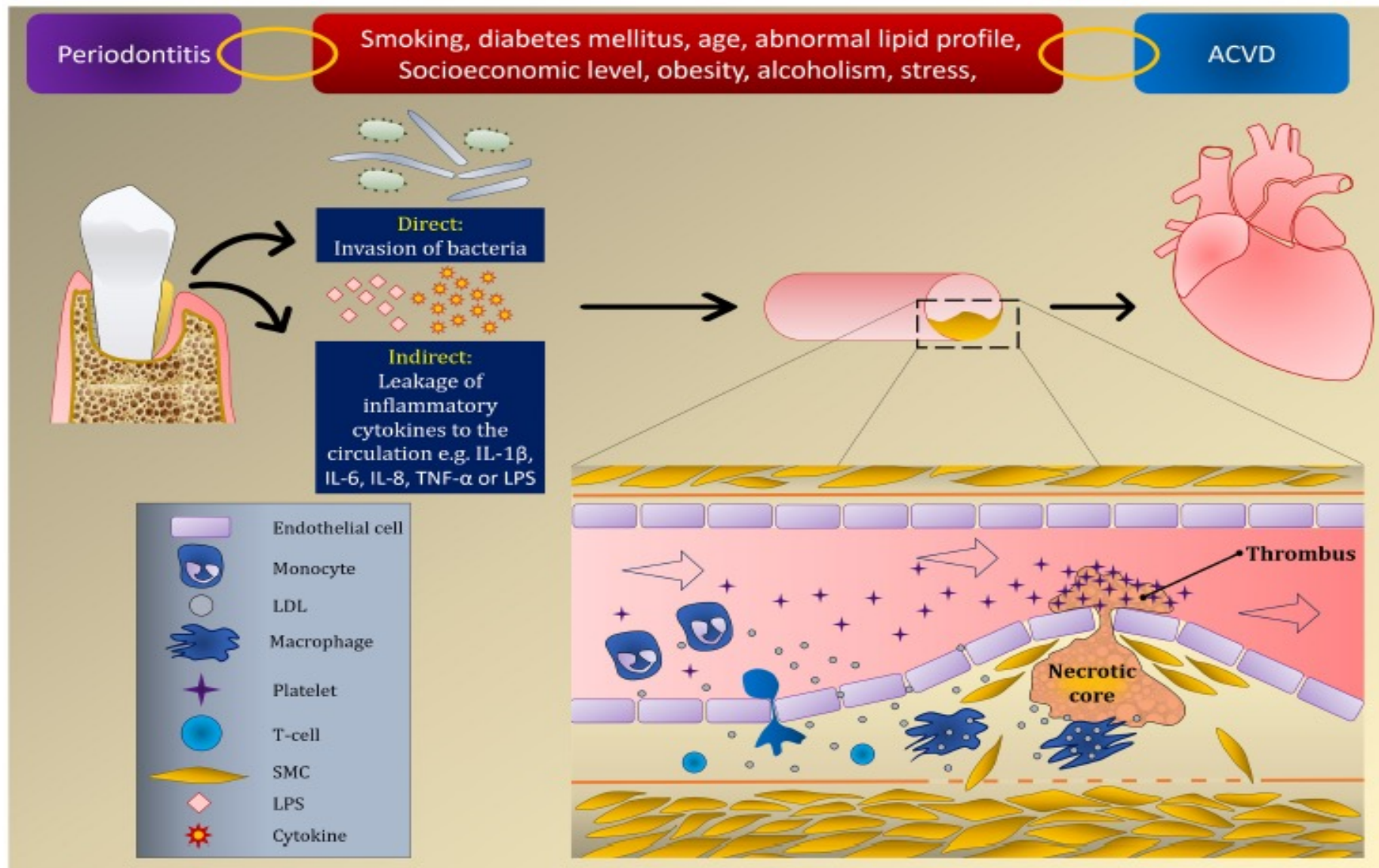
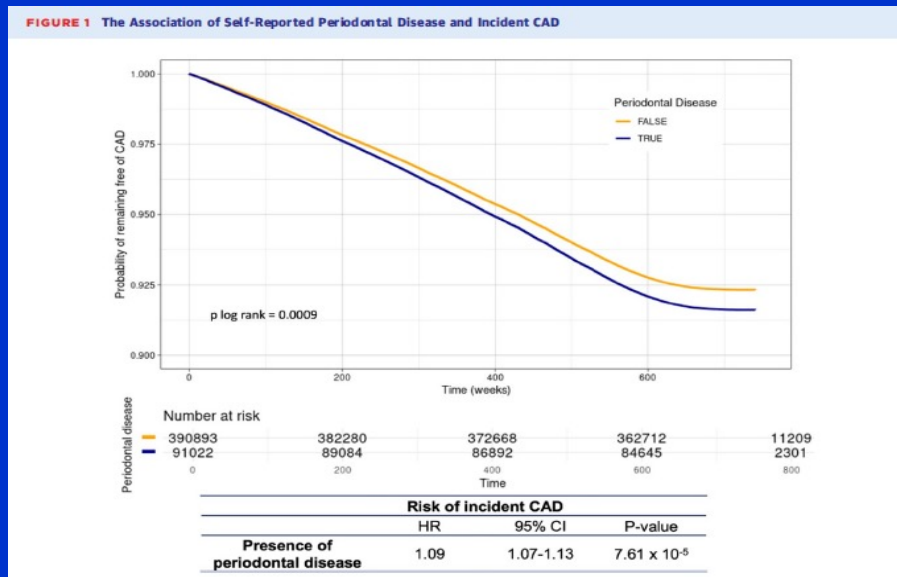


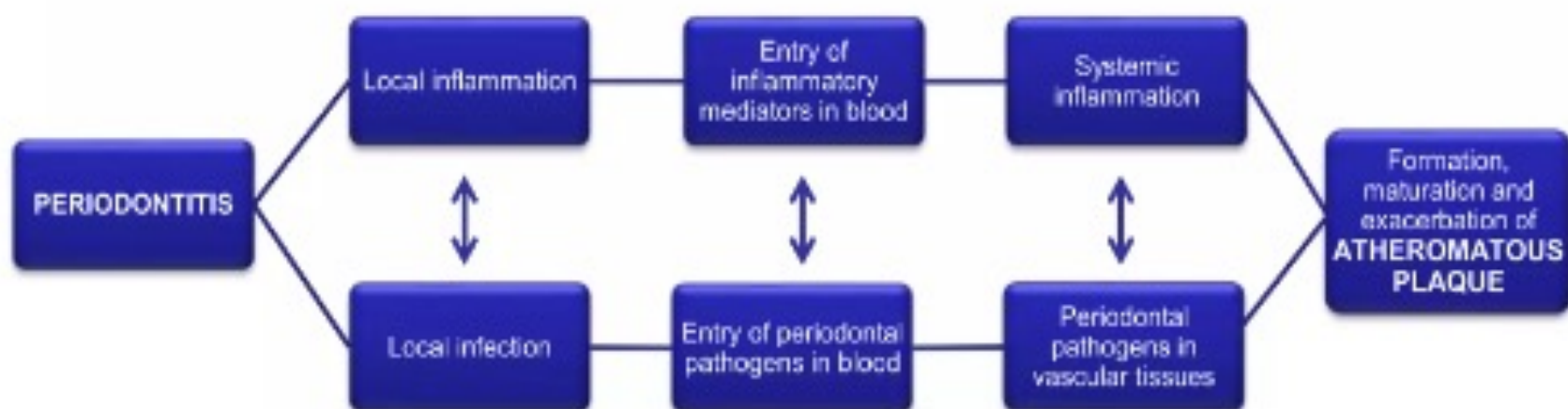
FIGURE 1 | Relationship between PD and ACVD induced by endothelial dysfunction.

EFFECTS OF PERIODONTITIS ON THE INCIDENCE OF CARDIOVASCULAR EVENTS

Periodontitis has been shown to increase the risk of a first ACVD event, (such as heart attack or stroke), independent of other known cardiovascular risk factors. The size of the increase in risk varies according to the type of ACVD event, and also depends upon age and gender and is greater for cerebrovascular disease than for coronary heart disease, and also greater in males and in younger people (studies show no increased risk in individuals aged 65 years or more).



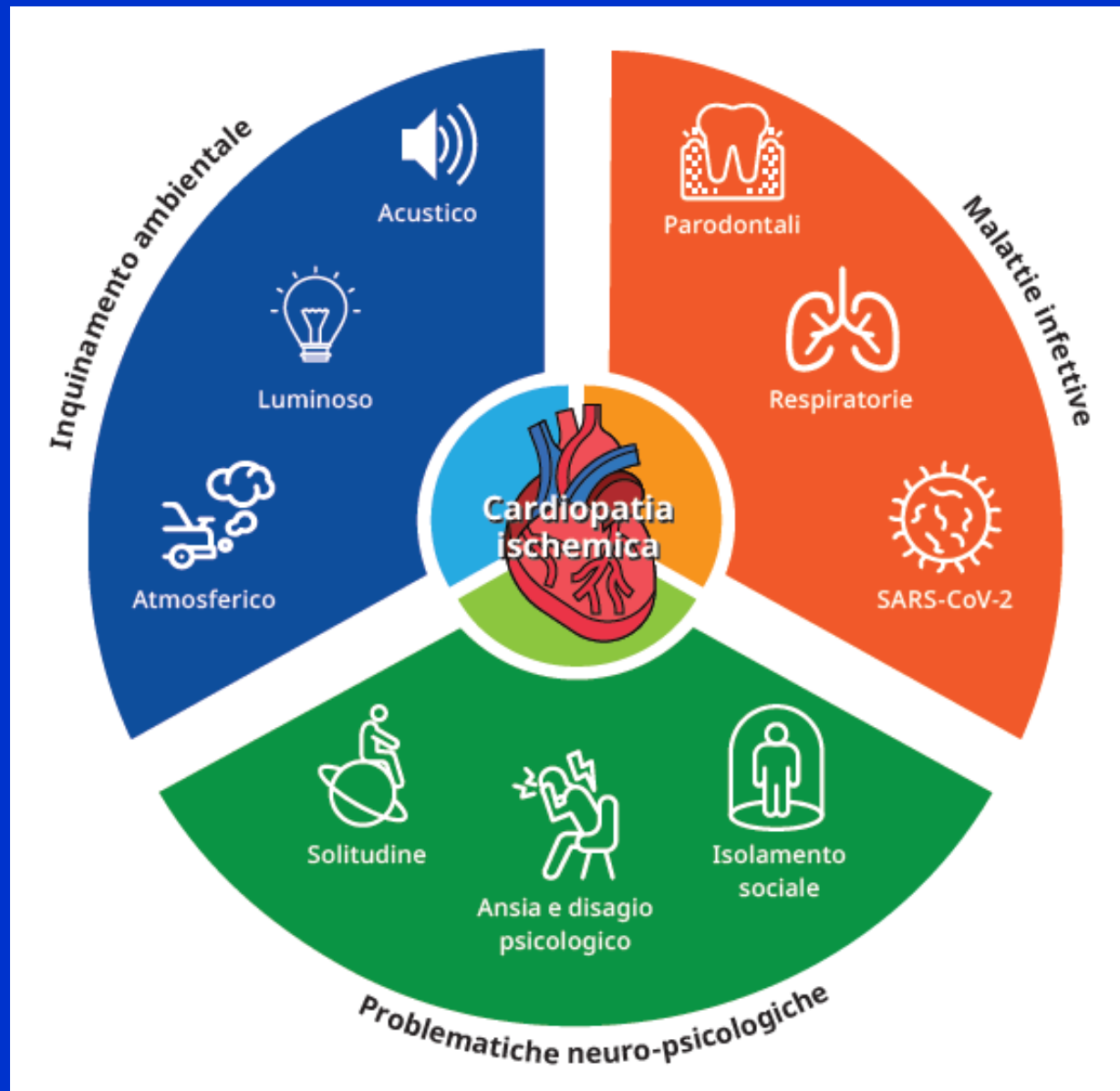
ETIOPATHOGENESIS



Individuals with **periodontitis** are at increased risk:

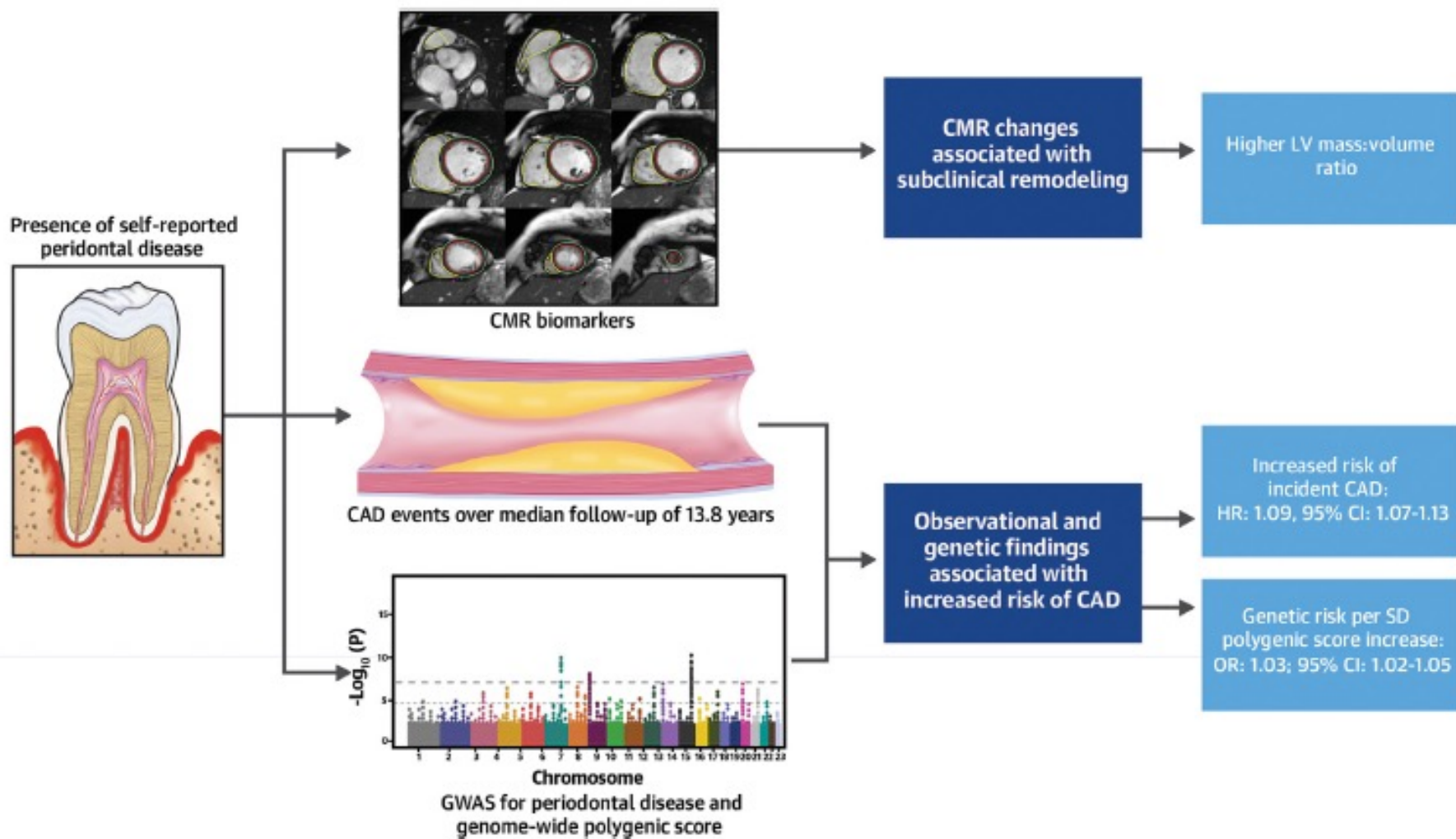
- 2.1 times for **acute myocardial infarction**
- 4.3 times for **stroke**
- 2.3 times for **peripheral vascular disease**

FATTORI DI RISCHIO NON TRADIZIONALI



MALATTIE CARDIOVASCOLARI E PARODONTOPATIE

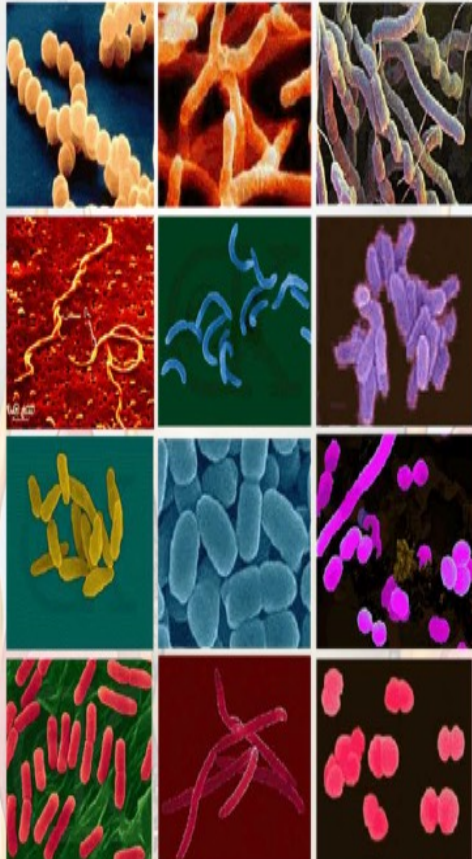
CENTRAL ILLUSTRATION The Association Between Periodontal Disease and Cardiovascular Disease: Insights From Imaging, Observational, and Genetic Data



MICROBIOTA CAVO ORALE

Microorganismi del cavo orale

BATTERI



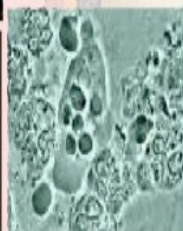
FUNGI



VIRUS



PROTOZOI



Porphyromonas gingivalis (Pg)
Aggregatibacter
actinomycetemcomitans (Aa)
Fusobacterium nucleatum (Fn)
Prevotella intermedia (Pi)
Tannerella forsythia (Tf)
Treponema denticola (Td)
Campylobacter rectus (Cr)

WHAT IS THE LINK BETWEEN PERIODONTITIS AND ACVD?

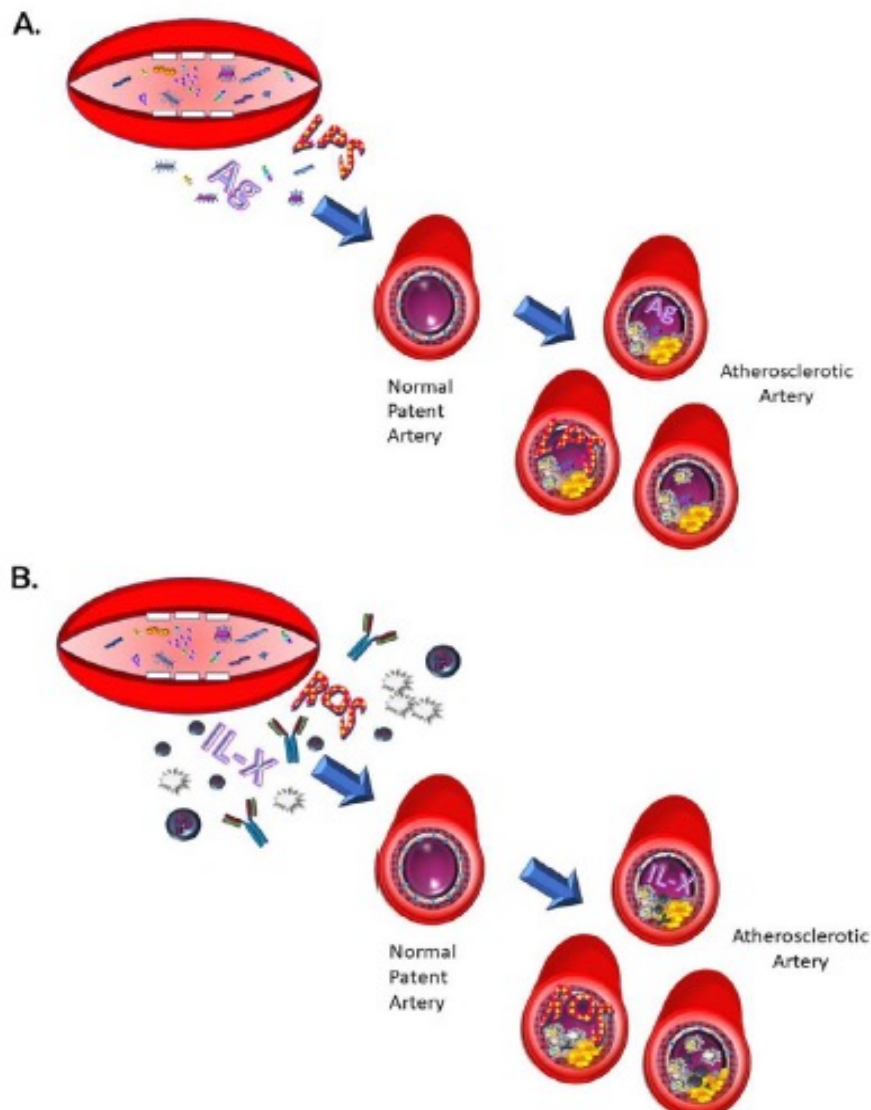


Fig. 1- There are 2 main hypotheses to explain the link between periodontitis and cardiovascular disease. A, Bacteria or their by-products (primarily lipopolysaccharides or antigens) can disseminate from the oral cavity into blood vessels and, there, a host response can lead to damage and atherosclerotic plaque formation. B, Alternatively, localized inflammation from periodontitis enhances ongoing chronic inflammation due to atherosclerosis. Periodontal disease-derived reactive oxygen species contribute to systemic oxidative stress and inflammatory mediators, including various interleukins, chemokines, cytokines (IL-X), immunoglobulins, and inflammatory cells (lymphocytes, macrophages, neutrophils), contribute to a destructive immune response at areas in the vessel wall prone to atherosclerosis.

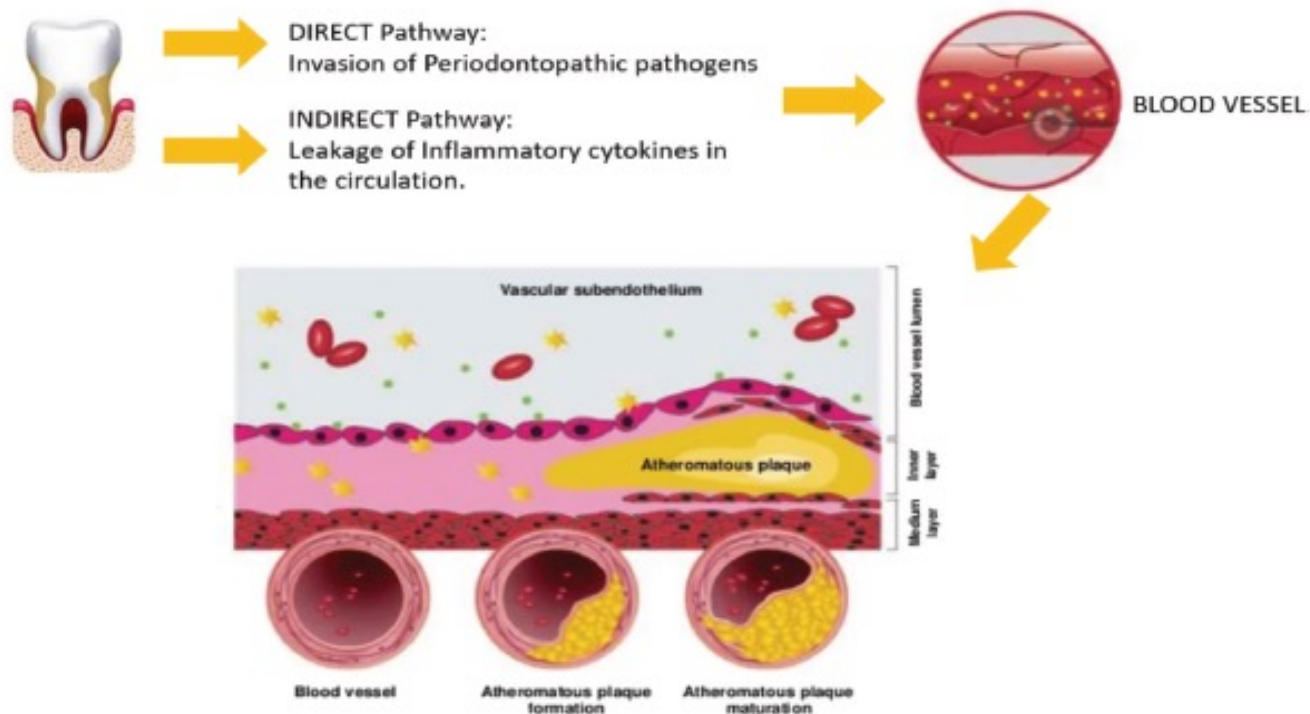


Fig. 1 - Direct and indirect relationship between periodontal disease and cardiovascular disease.

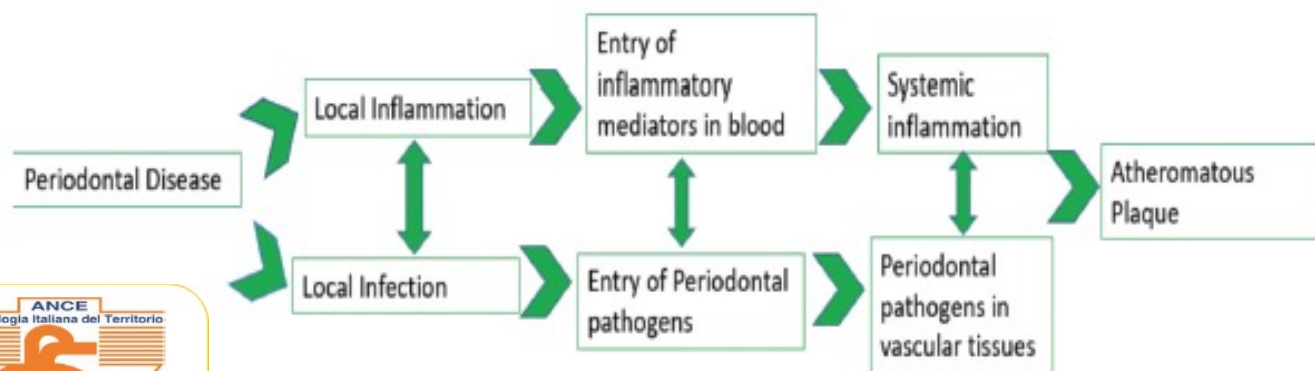


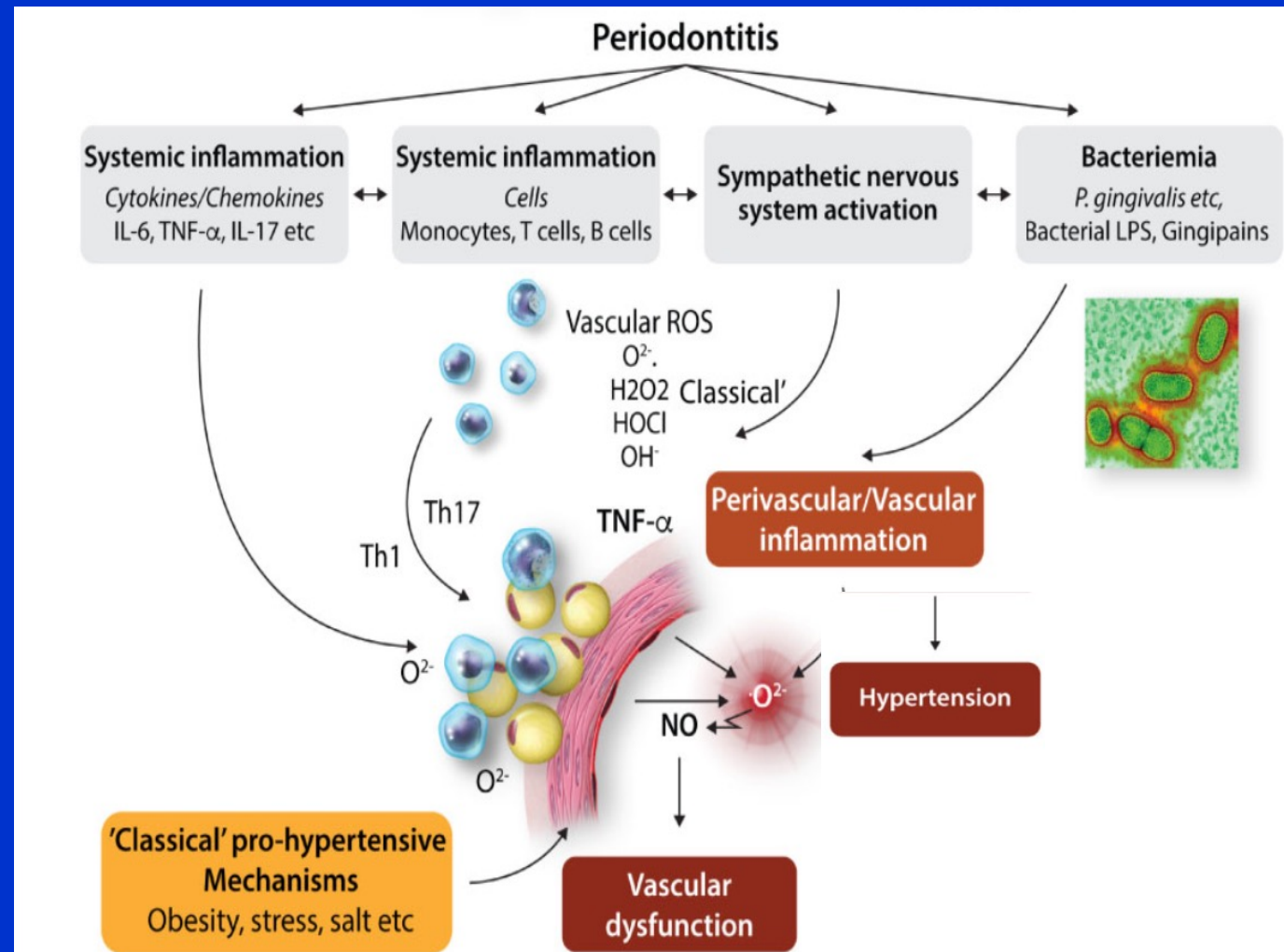
Fig. 2 - Etiopathogenesis flowchart.

LA PARODONTITE COME POSSIBILE FATTORE DI RISCHIO PER EVENTI CARDIOVASCOLARI

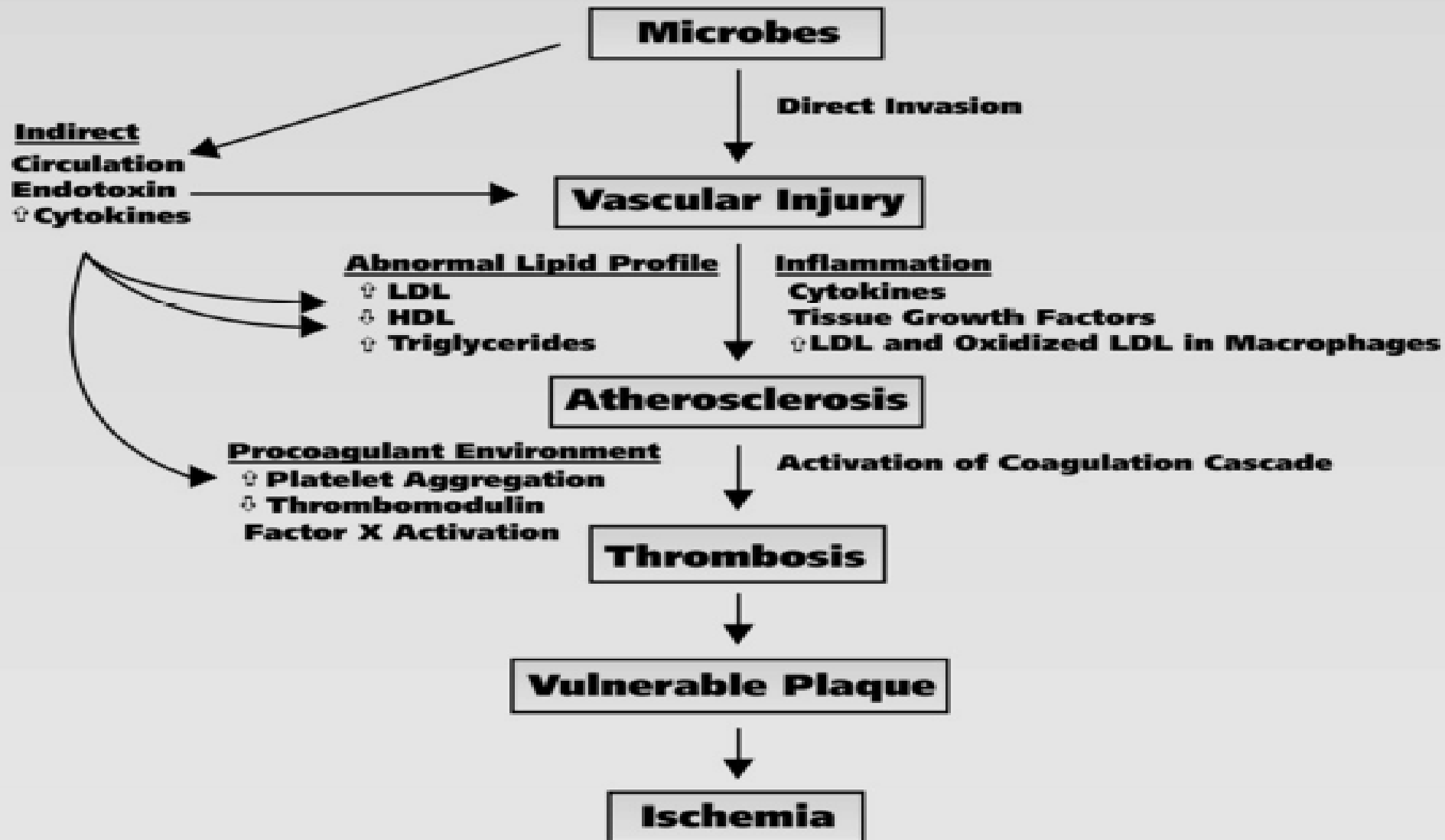
INFIAMMAZIONE
SISTEMICA CON
CONSEQUENTE
DISFUNZIONE ENDOTELIALE

EFFETTI DIRETTI DEL
MICROBIOTA ORALE

CELLULE ATTIVATE DAL
TESSUTO PERIODONTALE
INFIAMMATO CHE
VENGONO RECLUTATE NEL
TESSUTO ENDOTELIALE



FISIOPATOLOGIA



PERIODONTAL THERAPY AND CARDIOVASCULAR RISK

No association between “*invasive*” periodontal treatments and an increased incidence of myocardial infarction or ischaemic cardiovascular risk



WHAT ARE THE EFFECTS OF PERIODONTAL TREATMENT ON CARDIOVASCULAR OUTCOMES?

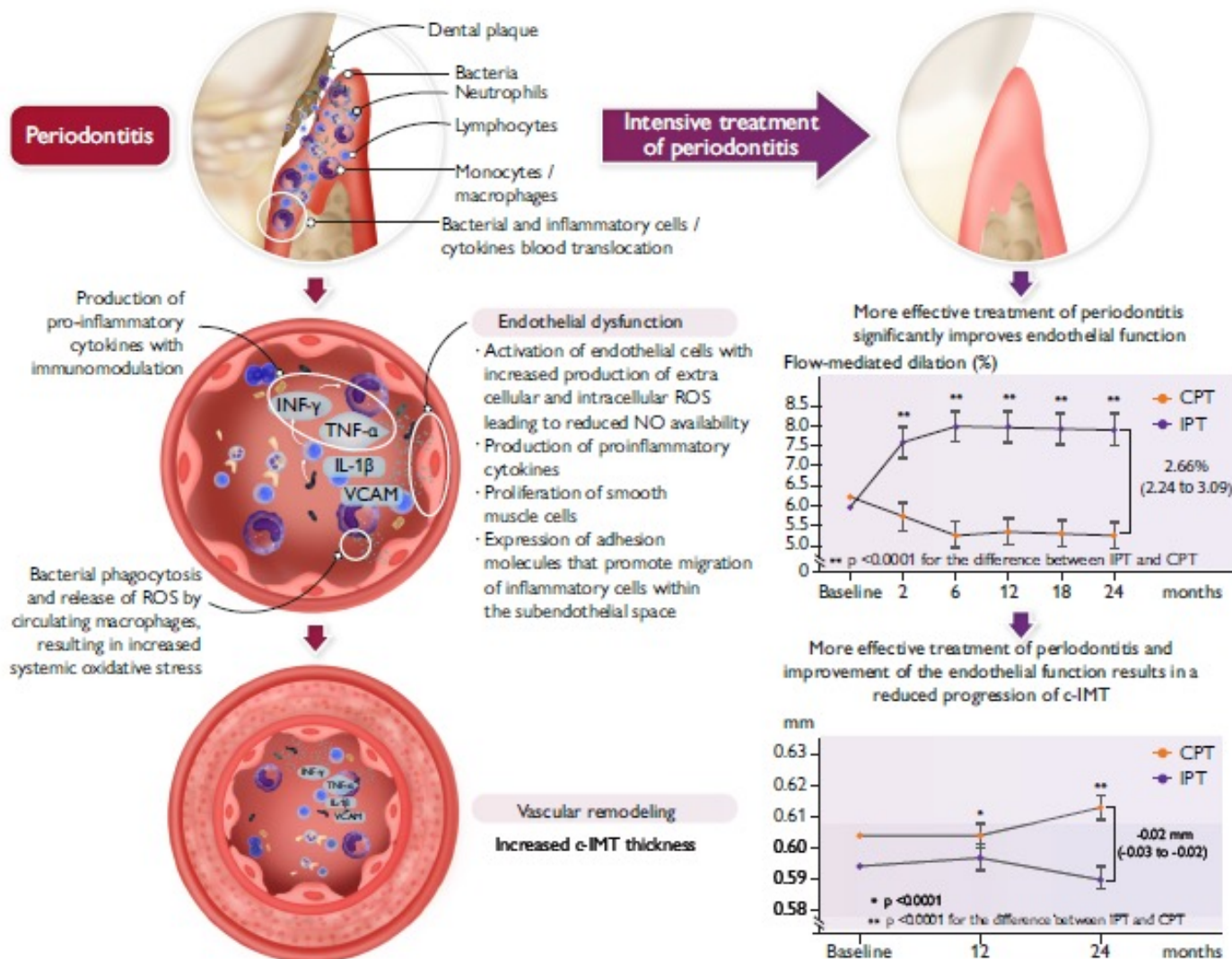
Periodontal treatment reduces the overall level of inflammation within the circulation.

Favourable effects on two key factors known to be important in ACVD risk: levels of a pro-inflammatory acute-phase protein agent C-reactive protein (CRP); and measures of endothelial cell function (FMD).

To date, no intervention studies have tested the effect of periodontal treatment on preventing first ACVD events (primary prevention) or on preventing recurrence (secondary prevention).



TERAPIA PARODONTITE



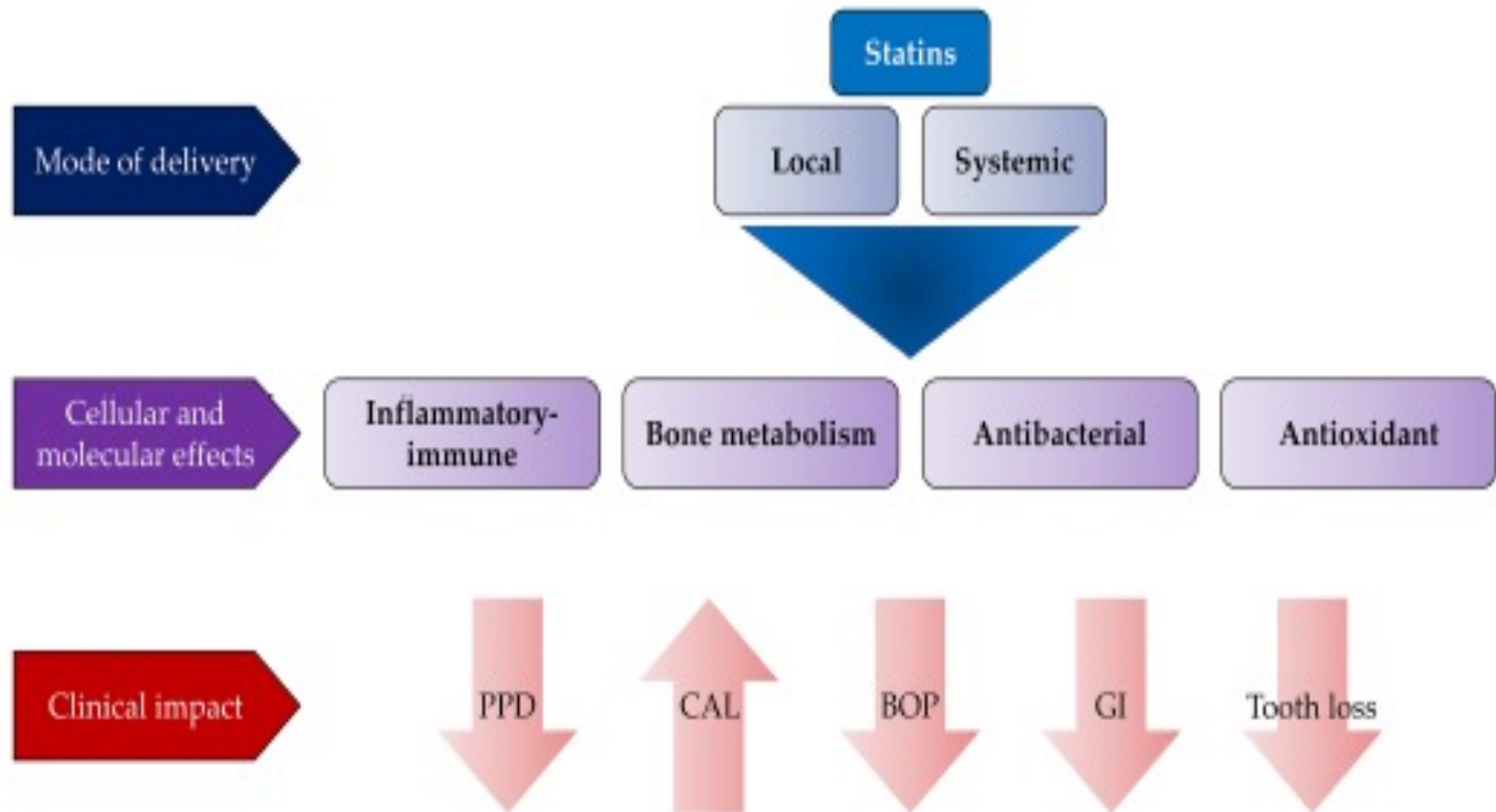
c-IMT, common carotid intima-media thickness; CPT, control periodontal treatment; INF- γ , interferon γ ; IL-1 β , interleukin-1 β ; IPT, intensive periodontal treatment; NO, nitric oxide; PD, periodontitis; ROS, reactive oxygen species; TNF- α , tumor necrosis factor α ; VCAM, vascular cell adhesion molecule

CAN ACVD TREATMENTS INFLUENCE TREATMENT OUTCOMES FOR PERIODONTITIS?

There is some new evidence that various anti-inflammatory agents prescribed to patients with ACVD - such as aspirin, statins, fish oil and vitamin D - may also help reduce periodontal inflammation.



STATINE E PARODONTOPATIE



PPD, probing pocket depth; CAL, clinical attachment level; BOP, bleeding on probing; GI, gingival index

FIGURE 2 | Effect of local and systemic use of statins on the outcome of conventional periodontal treatment.

PATIENTS UNDERGOING ANTICOAGULANT THERAPY



No increased risk of bleeding has been associated with oral vitamin K antagonist anticoagulant therapy in patients receiving dental procedures or dental implant placement.

A higher post-operative bleeding risk in patients continuing vitamin K antagonist-anticoagulant therapy, although post-operative bleeding could be effectively controlled with local haemostatic agents.

As for novel/direct anticoagulants the interruption of these drugs is not necessary for most dental-periodontal therapies, due to a low incidence of bleeding events associated with these drugs and which can be successfully managed with local haemostatic measures.

PATIENTS UNDERGOING ANTIPLATELET THERAPY

Single antiplatelet therapy such as acetylsalicylic acid (aspirin), clopidogrel, ticlopidine or ticagrelor did not increased the frequency of bleeding events as compared with control patients.

Dual antiplatelet therapy usually using the combination of aspirin and clopidogrel may induce a certain risk for post-operative bleeding, which may be managed with local haemostatic approaches.

The discontinuation of single or dual antiplatelet therapy before any kind of periodontal approach including dental implant placement is not recommended.

PROFILASSI ANTIBIOTICA



Recommendations for infective endocarditis prevention in high-risk patients



Recommendations	Class	Level
Antibiotic prophylaxis is recommended in dental extractions, oral surgery procedures, and procedures requiring <u>manipulation of the gingival or periapical region of the teeth</u> .	I	B
Systemic antibiotic prophylaxis may be considered for high-risk patients undergoing an invasive diagnostic or therapeutic procedure of the respiratory, gastrointestinal, genitourinary tract, skin, or musculoskeletal systems.	IIb	C

PROFILASSI ANTIBIOTICA

Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk for IE (1)



Recommendations	Class	Level
General prevention measures are recommended in individuals at high and intermediate risk for IE.	I	C
Antibiotic prophylaxis is recommended in patients with <u>previous IE</u> .	I	B
Antibiotic prophylaxis is recommended in patients with surgically implanted <u>prosthetic valves</u> and with <u>any material</u> used for surgical cardiac valve repair.	I	C
Antibiotic prophylaxis is recommended in patients with <u>transcatheter implanted aortic and pulmonary valvular prostheses</u> .	I	C
Antibiotic prophylaxis is recommended in patients with <u>untreated cyanotic CHD</u> , and patients treated with <u>surgery or transcatheter procedures</u> with post-operative palliative shunts, conduits, or other prostheses. After surgical repair, in the absence of residual defects or valve prostheses, antibiotic prophylaxis is recommended only for the first 6 months after the procedure.	I	C

PROFILASSI ANTIBIOTICA



Recommendations for antibiotic prophylaxis in patients with cardiovascular diseases undergoing oro-dental procedures at increased risk for IE (2)



Recommendations	Class	Level
Antibiotic prophylaxis is recommended in patients with ventricular assist devices.	I	C
Antibiotic prophylaxis should be considered in patients with <u>transcatheter mitral and tricuspid valve repair</u> .	IIa	C
Antibiotic prophylaxis may be considered in recipients of heart transplant.	IIb	C
Antibiotic prophylaxis is <u>not recommended</u> in other patients at low risk for IE.	III	C

PROFILASSI ANTIBIOTICA

Prophylactic antibiotic regime for high-risk dental procedures



Situation	Antibiotic	Single-dose 30–60 min before procedure	
		Adults	Children
No allergy to penicillin or ampicillin	Amoxicillin	2 g orally	50 mg/kg orally
	Ampicillin	2 g i.m. or i.v.	50 mg/kg i.v. or i.m.
	Cefazolin or ceftriaxone	1 g i.m. or i.v.	50 mg/kg i.v. or i.m.
Allergy to penicillin or ampicillin	Cephalexin	2 g orally	50 mg/kg orally
	Azithromycin or clarithromycin	500 mg orally	15 mg/kg orally
	Doxycycline	100 mg orally	<45 kg, 2.2 mg/kg orally >45 kg, 100 mg orally
	Cefazolin or ceftriaxone	1 g i.m. or i.v.	50 mg/kg i.v. or i.m.

SCREENING DENTALE PREOPERATORIO

Ritenuto necessario e quindi indicato:

- dipende dalle condizioni cardiovascolari del paziente
- dal tempo a disposizione pre-intervento
- la terapia odontoiatrica è indicata
- fondamentale la collaborazione tra cardiologo e odontoiatra (team multidisciplinare)



PARODONTITE E COMPLICANZE POST-OPERATORIE

The presence of Periodontitis is potentially harmful in the perioperative period due to biofilm generating a favorable environment for bacteria to spread and colonize other anatomical areas, which can generate a potential risk of infection, delayed healing, increased morbidity, and even induce avulsion in intubated patients, and subsequent aspiration or ingestion of teeth with increased mobility

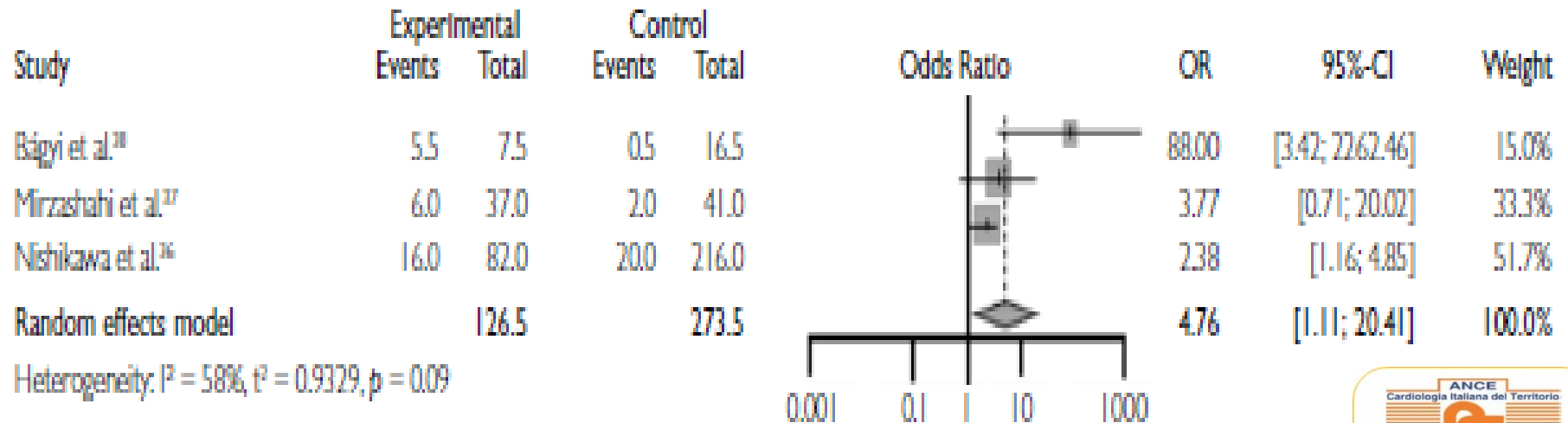


Figure 3. Combined risk of the association between postoperative complications and periodontitis



a positive and statistically significant association was established between Periodontitis and postoperative complications

CONCLUSIONS



Evidence has emerged revealing the possible associations between periodontal infections and CVDs. Although the reported epidemiological studies have shown a significant association, we still lack properly designed clinical trials demonstrating that these chronic infections are independent factors of cardiovascular risk. The use of surrogate variables assessing the infective load and measures of subclinical atherosclerosis have clearly shown, not only a significant pathogenic relationship, but also a significant impact after periodontal therapy.

Periodontitis-related recommendations for physicians and cardiologists



- a. Cardiologists should know that periodontitis is a highly prevalent disease that has potentially negative influences on CVD development and complications as well as that efficient periodontal treatment may positively impact CV status.
- b. **Cardiologists should advise all CVD patients on the above-mentioned topic and to seek periodontal specialized care as part of their ongoing management of CVD.** Even if no periodontitis is diagnosed initially, an annual oral check-up is recommended.
- c. For patients already diagnosed with periodontitis, the cardiologist must ensure that the disease has been effectively treated.
- d. The cardiologist should assist the periodontist in the management of patients under antithrombotic therapy before the periodontal surgery, to avoid risks of bleeding or ischaemic events.

GRAZIE

