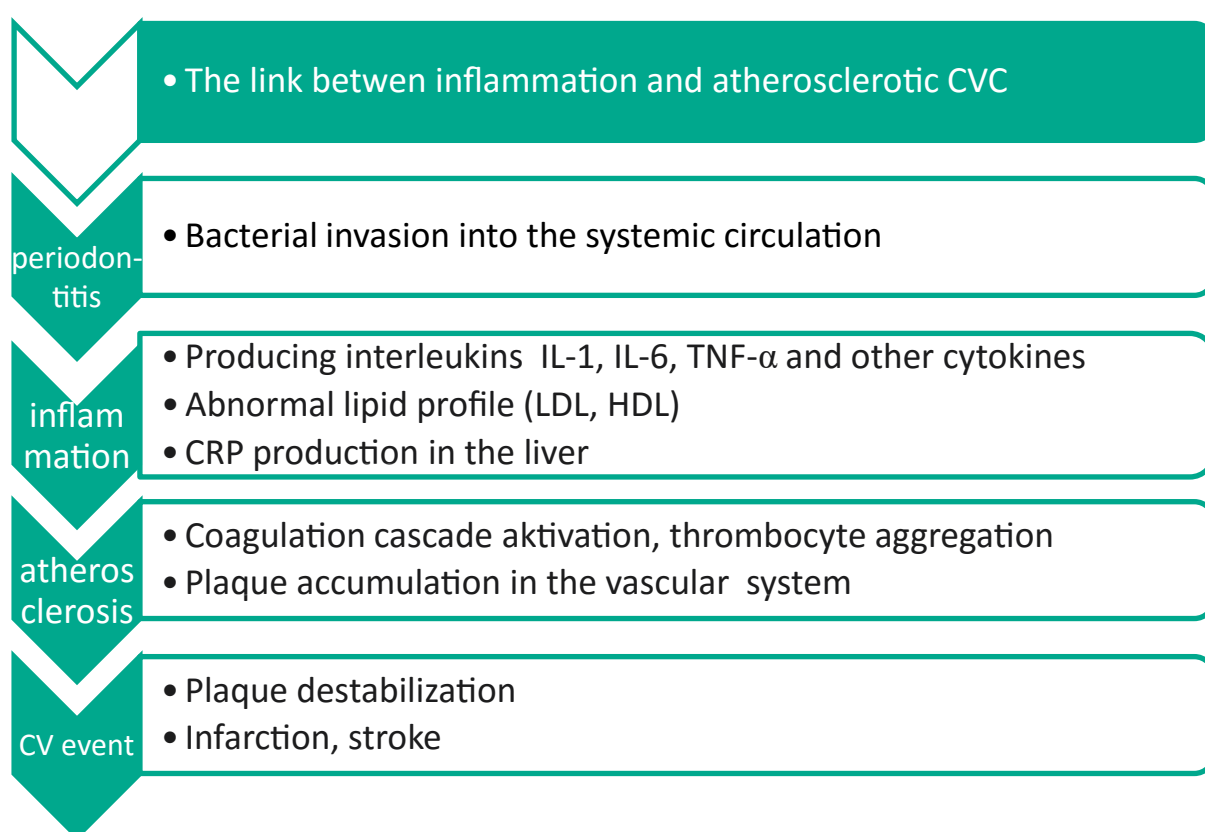




## Periodontal status and dental care of patients on peritoneal dialysis

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### Background

According to novel studies in haemodialysed patients chronic dental inflammation is a strong and independent non-traditional cardiovascular risk factor. The relationship between periodontal and cardiovascular diseases has been proved even in non-renal population. The dental health status of peritoneal dialysis patients seems to be worse than in haemodialysis. Gram negative bacterial accumulation on the teeth – under special environmental and genetic conditions – may activate several immuno-inflammatory processes and could cause endotoxaemia with systemic proinflammatory response, which might generalize atherosclerotic processes. Prevention of infective complications in peritoneal dialysis moreover involves education in how to develop and maintain an optimal oral hygiene level. It is the most important to ensure proper oral nutrition.

### Traditional and non-traditional cardiovascular risk factors in the peritoneal dialysis patients

Traditional	Uremia related	Dialysis related
obesity	disordered calcium and phosphate metabolism	bioincompatibility of dialysis system
hypertension	vascular calcification	oxidativ stress
smoking	hyperuricaemia	endhotelial dysfunction
dyslipidemia	anaemia	AGE products
physical inaktivity	increased uremic toxins	malnutrition
stress		inflammation
diabetes mellitus		

**Periodontitis** is a common and occult source of chronic inflammation. Periodontitis is a bacteria induced disease wich destroys connective tissue and bone that support the teeth. Prevalance of this chronic oral disease is higher in patients with ESRD than the healthy population. Moreover, the patients on PD had worse dental and periodontal findings than the HD patients. Patients with mild and moderate periodontitis are often asymptomatic.

### Dental care of periodontitis was associated with lower leucocyte number and hsCRP in the next few months.

	pre-intervention parameters (n=24) (median and range)	post-intervention parameters (n=24) (median and range)	paired Wilcoxon test results
serum albumin (g/L)	38,8 (29-46,5)	39,1 (29,2-44,8)	p= 0,482
leucocyte number (G/L)	7,82 (2,62-12,57)	7,72 (2,37-11,45)	p= 0,013
hsCRP (mg/L)	7,47 (0,84-42,7)	4,71 (0,91-14,76)	p= 0,013
erithropoietin dose (U/month)	12000 (1500-40000)	8280 (570-61700)	p= 0,064
hemoglobin (g/L)	117,3 (87-136)	117 (101,7-129,3)	p=0,811
ferritin (ug/l)	260,5 (8-754)	311,5 (17-909,3)	p= 0,0008

The main findings of this pilot study were that the dental care was associated with a significant decrease in leucocyte number and hsCRP in some months. Along with proper iron supplementation the ferritin level increased. There were no significant changes in hemoglobin level and serum albumin. The erythropoietin dose was slightly reduced.

### Objectives

The effect of a dental care educational programme and the consequences of the actual dental treatments were evaluated in patients on peritoneal dialysis. The previous 4 months and the next 4 -7 months clinical and laboratory data were analyzed by paired non-parametric Wilcoxon test.

### Patients

This crosssectional clinical study included 24 chronic PD patients (11 males, 13 females; mean age 59,2+12,8 years; 10 diabetics). 22 patients of them were treated with CAPD and the remaining 2 patients were on automated PD. 14 PD patients were on conventional lactate-buffered glucose-based PD solutions, 10 patients were on dialy icodextrin extra.

### Methods

A special educational programme was organized for our PD patients about periodontitis and its clinical consequences. 3-5 patients attended each thirty-minute educational session, in the course of wich interactive Power Point illustrations were projected. After the education the patients were sent to dental examination. The intraoral evaluation was performed according to WHO standard methods. Decayed, missing and filled teeth were detected, and the thickness of microbial dental plaque on the tooth surface near the marginal gingiva was assessed. During the following 2-3 weeks, 18 of the PD patients received a personalized surgical and medical therapy to eradicate inflammation. We analysed the previous 4 months and the next 4-7 months clinical and laboratory data comparing the mean leucocyte number, C-reactive protein (CRP), erythropoietin dose, haemoglobin and ferritin level, serum albumin.

### Conclusions and application to practice:

Fortunately, this is a modifiable source of infection in patients on peritoneal dialysis. First and foremost the prevention is of utmost importance. We should regularly reinforce our PD patients about the importance of oral hygiene. Long term clinical studies have demonstrated that the regular and effective removal of bacterial biofilm can prevent periodontitis. When the oral disease is manifested we should organize dental examination for our patients. As our small trial shows clearly, the treatment of dental infections can improve the proinflammatory status and might reduce the risk of futher CV complications in this high risk population.