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Male and Female Infertility and Periodontal Disease: Letter to The Editor.

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ABSTRACT

In almost one third of female and male patients which undergo infertility treatments, the casue of infertility is unknown. Recent literature results point that there might be a connection between periodontal disease and male and female infertility. Periodontal diseases are chronic infections which may lead to bacteriemia, endotoxemia, increased plasma levels of inflammatory cytokines and generalised immune dysregulation effect, resulting with negative influence on reproductive potential. Immune sensitization to microbial heat shock proteins even in the presence of asymptomatic and subclinical infection is associated with unsuccessful embryo development and implantation failure of in vitro fertilization patients. Also, ovulation drugs induce gingival inflammation which may have negative impact on the results of fertilization treatment. Literature results show that women with periodontal disease have significantly longer conception time. Some authors have found a connection of periodontal disease and sperm sub-motility. Therefore in every infertile patient (male and female) periodontal status should be checked and appropriate periodontal treatment should be performed.

Keywords: male infertility, female infertility, periodontal disease, chronic infection

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In the last 13 years there have been scarce data published in the literature regarding connection between male and female infertility and periodontal disease. In 20-30% of female and male patients, the casue of infertility is unknown. Therefore, the aim of this study was to review existing knowledge upon this topic. Pubmed was searched and 11 articles were found.

Haytac et al. [1] have analysed the effects of ovulation induction, the most common method used in the management of infertility, on the gingival tissues of women who were undergoing infertility treatment. The results have shown that ovulation induction exarcerbates gingival inflammation, bleeding and gingival crevicular fluid volume. It has been shown that the usage of these drugs is strongly associated with the severity of gingival inflammation. Periodontal diseases are chronic infections which may lead to bacteriemia, endotoxemia, increased plasma levels of inflammatory cytokines and increased immunity to microbial heat shock proteins. Immune sensitization to microbial heat shock proteins even in the presence of asymptomatic and subclinical infection is associated with unsuccessful embryo development and implantation failure of in vitro fertilization patients. Therefore it may be suggested that periodontal status may affect reproduction success and the outcome of infertility treatment. Gingival inflammation induced by ovulation drugs may also have negative impact of the results of treatment. Meticulous oral hygiene and professional prophylaxis at the begining of each menstrual cycle to ensure the presence of the healthy periodontium before assisted reproductive technology would minimize the effects of gingival inflammation on the success of infertility treatment.

Kavoussi et al. [2] in a population study which consisted of 4136 women have investigated a possible association between endometriosis and periodontal disease. Both of this disorders are chronic, inflammatory processes, more common in those with systemic autoimmune disorders. The results of the study showed that women with self reported endometriosis have significantly (57%) higher odds of having both gingivitis and periodontitis compared to women without self-reported endometriosis. Multifactorial development of endometriosis may be augmented by an immune response to an infectious agent from periodontal sites. The potential underlying link between the two diseases may be generalized, global immune dysregulation. Knowing the negative influence of endometriosis on reproductive potential, the treatment of periodontitis could have a positive impact on the improvement of fertility. Klinger et al. [3] investigated connection between periodontitis and fertility in 75 males.The results of their study showed that 40% of infertile males had gingivitis and 48% had periodontitis. Furthermore, normal sperm count was seen in 37%, of these patients, oligozoospermia in 48% and azoospermia in 15% of these patients. Therefore, the same authors [3] concluded that increased number of sites with deep periodontal pockets as well as clinical attachment levels correlated with sperm sub-motility. Hart et al. [4] analysed 3416 spontaneous conceptions and 1014 cases with periodontal disease. In 146 females, time for conception lasted more than 12 months and periodontal disease was significantly more prevalent in this group (34.9% versus 25.7%). The same authors [4] concluded that there is an association between periodontal disease and female infertility, but also that this has to be further confirmed. Nwhator et al. [5] highlighted complete lack of knowledge among gynecologists regarding connection between periodontal disease and sub-fertility.Akcali et al. [6] evaluated seven periodontal pathogens in 125 females with polycystic ovary syndrome (PCOS).

In women with PCOS, salivary Porphyromonas gingivalis, Fusobacterium nucleatum, Streptococcus oralis and Tannerella forsythia levels were higher than matched systemically healthy women, however Aggregatibacter actinomycetemcomitans and Treponema denticola levels did not differ significantly. Furthermore, PCOS patients had enhanced P. gingivalis, Prevotella intermedia and S. oralis levels, when gingivitis was also present. Gingival inflammation correlated positively with levels of the studied taxa in saliva, particularly in PCOS. The most consistent effect appeared to be exerted on P. gingivalis. Nwhator et al. [7] which involved 58 fertility clinic attendes and 70 pregnant controls, have explored the association between the chronic periodontitis and time to conception. The simplifed oral hygiene index, community periodontal index and modern rapid chair-side MMP-8-immunoassey were used for the assesment of periodontitis. The result of the study showed the signihicant associaton between time to conception and age ($P<0.01$), periodontitis ($P<0.01$) assessed with a MMP-8 chair-side oral rinse. In another study, Nwhator et al. [8] studied 76 males regarding infertility and oral hygiene as well as periodontal status by use of active membranemetalloproteinase-8 test. The same authors [8] proved positive correlation between poor oral health and chronic periodontal disease with the subnormal sperm count.

Kellesarian et al. [9] performed review of the existing literature upon oral health which included dental and periodontal health and found out that six studies showed positive connection between caries indeks, necrotic pulp, chronical apical osteitis and radicular cysts with male infertility.

Pásztor et al. [10] analysed 95 infertile male patients and reported that half of these which had sperm pathology and normozoospermia (50.8% and 50%, respectively) also had poor periodontal status. However, their study could not confirm that pathospermia and poor semen quality were associated with periodontal infection in men with idiopathic infertility. Martelli et al. [11] also highlighted the role of periodontal disease in infertile females.

We might conclude that in some patients infertility might correlate with periodontal disease. Therefore in every infertile patient (male and female) periodontal status should be checked and appropriate periodontal treatment should be performed.

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