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Smoking in Andrology: State of Art

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Andrology (from Greek andros, "man"; and -λογία, -logia) is a medical specialty that deals with male health, particularly related to the problems of the male reproductive system and urological problems that are unique to men. However, the scope and mission of Andrology is expanded from being traditionally concerned with issues related to male infertility, erectile dysfunction and prostate diseases in the past to broader interests in wide aspects related to male reproductive health and male health in general.

A matter of concern in science as well as experience is smoking as an andrologically related issue. Actually, despite worldwide anti-smoking campaigns, cigarette smoking is rather common with strong evidences that smoking behavior is related to social factors, particularly the influence of parents and peer groups. Taste and smell also influence the inclination to smoke where exciting sensory organs in the lips, mouth and throat provide sensations of touch, taste and irritation. Also, it has been suggested that high negative mood variability is a risk factor for future smoking escalation and that its mood-stabilizing effects may reinforce and maintain daily cigarette use among youths.

Strong body of evidence has indicated the negative effect of cigarette smoking on male fertility affecting every system involved in the reproductive process. Different articles have demonstrated a negative impact of smoking on human semen parameters, correlated with cigarettes intensity and duration. Most articles argued that smokers demonstrate lower semen volume, sperm count, sperm motility, sperm viability and normal sperm morphology compared with non-smokers. In addition, they experience increased seminal leukocytes, oval sperm percentage, spermatozoa with cytoplasmic droplets, apoptotic markers, seminal lead and seminal cadmium. In addition, passive exposure to environmental tobacco smoke has been shown to result in measurable seminal nicotine and cotinine levels correlated with the degree of the reported exposure. Meanwhile, the combination of smoking and varicocele has been shown to be strongly related to the incidence of oligozoospermia having an incidence 10 times greater than non-smokers with varicocele and 5 times greater than smokers devoid of varicocele [1-3].

On the other hand, many opinions were raised to deny that affection on male infertility where millions of smokers are fathers. However, although smokers as a group may not experience reduced fertility, males with marginal semen quality may benefit from quitting smoking. Also, smokers should quit smoking for the sense of responsibility for their future generation as tobacco smoke contains numerous mutagenic substances.

Nevertheless, while it is clear that Erectile Dysfunction (ED) is multi-factorial, the direct and negative effects of smoking on erectile function are well documented where several epidemiological studies demonstrated that smoking or even chronic passive smoking not only increases the risk of ED, but also amplifies its risk associated with other risk factors as hypertension, diabetes, dyslipidaemia or aging. Cigarette smoking-induced ED in human or animal models has been associated with impaired arterial flow to the penis, acute vasospasm of penile arteries, decreased synthesis/availability of nitric oxide leading to endothelial damage with architectural and functional changes, oxidative damage to endothelial cells, increased production of cyclooxygenase dependent and independent vasoconstrictor eicosanoids, activated Rho-associated kinase activity and vascular stiffness. Another interesting aspect that should be considered is the association between smoking and decreased testosterone that plays a major role in men's sexual function, libido and cGMP formation, through nitric oxide synthase stimulation/catabolism through phosphodiesterase-5 activity.

Although cessation of cigarette smoking can improve ED in a considerable proportion of smokers, age and severity of ED before cessation are inversely related to the chance of improvement. Prevention of smoking represents a very important approach for reducing the risk of ED.

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