ARC Journal of Addiction
Volume 3, Issue 2, 2018, PP 52-56
www.arcjournals.org

Case Presentations: The Emergency Smoking Cessations. A Patient before Kidney Transplantation and a Patient with Finger Microsurgery after Amputation

Bektas Murat Yalcin[1*], Esra Yalcin[2]

[1]*Associate Professor, Ondokuz Mayis University Medical School Department of Family Practice, Turkey*

[2]*Dr. Gazi State Hospital, Samsun, Turkey*

***Corresponding Author:** ***Bektas Murat Yalcin**, Associate Professor, Ondokuz Mayis University Medical School Department of Family Practice, Turkey, **E-mail:** myalcin@omu.edu.tr*

Abstract: *In years many special cessation programs been tried to increase cessation success rates with different medical treatments. Among these it has been observed that smoking cessation programs tailored to the transtheoretical life style modification model are the most successful approaches. These programs need time to get the smokers ready for quitting smoking. In the first interview the therapists demand from smokers to appoint a cessation day at first interview. This cessation day usually favored to be appointed 10 or 14 days from initial interview. This time period is benefitted by enhancing some life style medications. Also if a medical therapy (Varenicline or Bupropion) is initiated, the drugs need 7 or 10 days to reach effective blood concentrations (Nicotine replacement therapy must be started at the quit day. However, in some cases several patientsneed to stop smoking immediately related with their medical conditions. In this case presentation study, we present several patients who had been applied to Ondokuzs Mayis University Medical Faculty Family Medicine Smoking Cessation Clinic that should quit smoking very urgently because of their medical conditions were discussed. One of this case is a male patient who had undergone a fingertip amputation following an accident at work and planted his finger by a micro-surgical operation. The second case is another male patient who wants to quit before renal transplantation operation.*

1. INTRODUCTION

Increasing prevalence of smoking addiction around the world which causes many medical, social, economic and legal problems, has become an important health problem.[1]In 2008, over 1.1 billion people smoked tobacco although smoking is the most common preventable death cause in the world, and every eight seconds one person loses his life from a cigarette-related illness.[2] Many health professionals concentrate their efforts on cessation activities in order to decrease morbidity and mortality rates from cigarette related illness. However, smoking addiction has been accepted as a form of social behavior or habit for many years in society. As the knowledge and perception of the destructive effects of cigarette smoking on the society increased, an interest and desire for smoking cessation services accelerated. In years many special cessation programs been tried to increase cessation success rates with different medical treatments. Among these it has been observed that smoking cessation programs tailored to the transtheoretical life style modification model (A model which accepts each person belonging to one of five different steps in a modifying life style circle) are the most successful approaches.[3-4] In cessation programs using the principles of transtheoretical approach the therapist demands from smoker to appoint a cessation day at first interview and initiates medical therapy (Varenicline or Bupropion) if needed.[5] This cessation day usually wanted to be appointed 10 or 14 days after the first interview. This period of time is benefitted to enhance some special life style modifications or to reach effective blood concentrations of medication. However, in some cases several patients need to stop smoking immediatelyrelated to their medical conditions. In this case presentation we like to present two different cases who need to quit smoking urgently.

2. CASE 1

2.1. Part I

Forty-seven year male patient (H.K.) had applied to Ondokuz Mayis University Medical Faculty Family Medicine Smoking Cessation Clinic in March 2017. He was diagnosed as autosomal dominant polycystic renal disease several years ago. In the recent years his symptoms became more severe and now he was

suffering from end stage chronic kidney failure for four years which he was undergoing renal dialysis two times a week for four years. He was on the waiting list for cadaveric kidney donor for several years. Finally, he found a volunteered kidney donor among his relatives and transplantation operation is scheduled in a week. The head surgeon of transplantation team demanded him to cease smoking immediately in order to increase the success of the operation. The donor is not smoking and the patient H.K. demand a professional help to cease smoking immediately.

Cigarette smoking increases the risk for cancer and cardiovascular disease in the general population.[1] Smoking also may have adverse effects on renal function.[7]Several studies have suggested an association between smoking and risk of macroalbuminuria/proteinuria and microalbuminuria.[6,7]Some other researchers also suggest that smoking may promote a decrease in kidney function, particularly in those with primary renal diseases, diabetes mellitus and hypertension.[8] The mechanisms of smoking-related kidney injury are not entirely clear. There are several hypotheses that this process is likely multifactorial which direct vascular effects that could lead to both small- and large-vessel disease.[9,10]On the other hand several studies have suggested that activation of the sympathetic nervous system may, increase oxidative stress, aggravate hypertension and result in endothelial dysfunction.[11] Also intrarenal hemodynamic may be altered by smoking. One of the most potent effects of smoking to body is its effect on immune system. Smokers are also at risk of immune-mediated native kidney disease.[12] This factor is more important in tolerance-rejection balance in organ transplant.[13] It is known that active smoking may be an important risk factor for transplant loss and mortality from prior studies about renal tranplantations.[14]

2.2. Part II

In the first interview H.K. stated that he was smoking for 25 years. He had a package/year score of 30. He got eight points from Fagerstrom Test for Nicotine Dependency (FTND). This score indicated that he had a high level of addiction. During the progress of his renal disease several doctors advised him to quit smoking. He had three successful quit attempts and the longest attempt lasted for a month in the previous five years. In these attempts he tried to use "Cold Turkey" method without any professional help. His physical examination reveals no evident urgent problems except high blood pressure (Left arm: 168/98 and right arm: 170/96 mm Hg). His Body Mass Index (BMI) is 28.7 Kg/m^2 with a waist circumference of 102 cm. After a motivational interview H.K. stated that he didn't want to use any more drugs however he found nicotine replacement therapy (NRT) more sympathetic. After the benefits and disadvantages of the NRT is discussed with him a cessation day is appointed (The day after) and 25 mg nicotine patch/daily therapy for him is planned. Before the start of therapy, a written consent of the patient is taken. Special strategies against nicotine carvings and withdrawal symptoms are also discussed with H.K.

In a retrospective review including 1,334 renal transplant patients it was found that a smoking history of 25 pack-years was associated with a 30% higher risk of transplant failure (p=0.021).[15] In this study it was pointed out that lesser magnitudes of smoking did not show significant associations with transplant survival and stopping smoking five years before transplant abrogated some of the risk of smoking. This study also suggested that the higher rate of transplant loss in heavy smokers was caused by an increase in deaths because higher mortality was noted in smokers and return to dialysis therapy and one-year serum creatinine levels were not different in smokers. In another large systematic review, it was found that pre-transplant smoking was a strong and independent risk factor for transplant loss during follow-up of 10 years (adjusted relative risk, 2.3; P<0.005) of 645 kidney transplant patients.[16] This study also confirmed that those who stopped smoking in pretransplantation period were not at higher risk of transplant loss compared with those who never smoked. However, they noted no difference in risk of acute rejection between smokers and nonsmokers. Thus, the limited available data suggest that current smoking at the time of transplant appears to be associated with worse transplant survival, but the mechanism for this apparent association is unclear.

2.3. Part III

H.K. quitted smoking after the first interview day. A motivational telephone interview is performed in the morning of the quit day (To congratulate the patient, discuss about any craving and withdrawal symptoms, overview the

strategies against them). He used 25 mgr. nicotine patches x 24 hours for a week. The second interview is planned at the fourth day after the quit day and the initial conditions of the patient is discussed. He had no early relapses or slips. In the operation morning a bedside visit is also performed and NRT is stopped. He was discharged from hospital after a week and two additional visits are performed in the clinic. After one year from operation he was still ex-smoker without a problem in the transplanted kidney.

3. CASE 2

3.1. Part I

Thirty-eight-year-old worker (A.L.) had been sent for consultation to our smoking cessation clinic from Plastic Surgery Clinic of Ondokuz Mayıs University at May 2018. He had a workplace accident two days ago and a machine had cut his right hands' index finger. His finger is replanted by a micro-surgical operation. Although the plastic surgeons warned him about smoking for the success of the operation he had smoked more than 15 cigarettes till the operation day. In the first interview he told that he was smoking for 15 years with a package/year score of 15. He had no cessation attempts during this time. As investigated the conditions before the accident FNTD score was nine. This score indicate that he had a very high level of addiction. His BMI is 25.7 Kg/m^2 with a waist circumference of 98 cm and the physical examination reveals no unusual findings expect his bandaged right hand index finger. In the interview he told that he was suffering several nicotine cravings crisis in a day.

Smoking had very adverse effects on wound healing process. Although the underling mechanism is not fully understood it is well known that smoking inhibits wound heal.[17] This situation is especially studied in acute (postoperative) rather than chronic wounds.[18] Basically the toxic material such as nicotine, carbon monoxide, and hydrogen cyanide had several effects in the tissue. This effects can be direct or indirect (Increased rates of secondary infections). In the smokers the tissue oxygenation, fibroblast activity, epithelialization and collagen synthesis is decreased.[19]Fibroblasts produce essential structural proteins such as collagen fibronectin that are needed for granulation tissue formation and epithelialization. Collagen is the primary structural protein that affects a healing wound's tensile strength and research has demonstrated that its production is diminished in smokers. Also proliferation of white blood cells and erythrocytes, lymphocyte functions, cytotoxicity of natural killer cells and bactericidal activity of neutrophils are inhibited.[20] Diminished numbers of erythrocytes lead to inadequate oxygen availability, which results in tissue hypoxia. White blood cells (macrophages) are essential for the phagocytosis of tissue debris, bacteria, and apoptotic neutrophils during the inflammatory stage of healing. They also generate a host of cytokines that signal subsequent healing processes such as angiogenesis. Smoking not only reduces white blood cell migration to the wound site, but also diminishes lymphocyte function.

3.2. Part II

After the benefits and disadvantages of the several therapy options are discussed with A.L. it was decided that only NRT (gum) had a realistic chance to help him quit smoking. A.L. decided to use NRT (Nicotine Gum 2 mgr. x 5) in order to quit smoking. The number of Gums per day was limited to maximum to five. The chew and park method is explained to him. The day after the first interview is appointed as cessation day. Before the start of therapy, a written consent of the patient is taken. Special strategies against nicotine carvings and withdrawal symptoms are also discussed with A.L.

In the literature there are no constant recommendations for smoking cessation for the patients in wound healing. Although "Cold Turkey" method logically have no side effects on the wound heal, using the other pharmacotherapy options (Varenicline and Bupropion) in patients with acute wound healing process have no contraindication.[21] In study by Myles et al[22] 47 patients who went elective surgery started to receive bupropion from seven to ten days from their operations had a better quit smoking rate compared with the control group. Until recently there is only one placebo-controlled trial of Varenicline in surgical patients (N=286). It was found that Varenicline was efficacious in increasing sustained abstinence rates, suggesting its promise as another tool to aid perioperative smoking cessation.[23]The most disadvantage feature of Bupropion and Varenicline is that they must be started at least one-week from the planned operation and they have no real medical

effects in emergency conditions. Also there is an increased risk of perioperative nausea from Varenicline. There is strong evidence that NRT enhances the efficacy of smoking cessation.[24]There are controversial findings about using NRT in wound heal. Some evidences claims that in small doses nicotine accelerates angiogenesis in diabetic mice[25]and wound healing in humans[26]. However, in some animal models the long-term administration of relatively large doses of nicotine can reduce the viability of surgical flaps and interfere with the healing of bone [27]There is currently no evidence from human studies that NRT is harmful to surgical patients.[28]It can be speculated that the effect of nicotine to the wound heal is dose related. The nicotine used in NRT is lower than the dose taken with smoking.The peak value reached in different nicotine forms is 6-12 μg / dl, while the value reached after cigarette smoking is 35 μg / dl (20-50 μg / dl).At low doses, nicotine does not show euphoric effects when lifting a portion of withdrawal symptoms.Due to the lack of nicotine, the withdrawal symptoms are removed from the cigarette, allowing the person to leave the cigarette with less difficulty.

The major contraindications for NRT can be listed as post myocardial infarction (within two weeks), serious arrhythmias, unstable angina pectoris. Also it pregnant and breast feeding women must be very carefully judged with benefit and harm balance.[29]The future studies must examine the effects of nicotine in doses commensurate with those provided by clinical NRT. Also the effects of nicotine on surgical site infections, the most common clinical healing-related perioperative complication must be investigated.

3.3. Part III

A motivational telephone interview is performed with A.L. in the morning of the quit day (To congratulate the patient, discuss about any craving and withdrawal symptoms, overview the strategies against them). The second visit is performed after the fourth day from the initial one. He told that he had very strong withdrawal symptoms for one or two days however he resisted to smoke anymore. In the post-operative wound care of the finger after ten days from the operation it was seen that the replanted finger was still alive and recovering. He used NRT in very low doses for two weeks then the NRT is stopped. He was followed by our clinic for three months and he had no relapse or slip without losing his finger

REFERENCES

[1] WHO. World health statistics. World Health Organization; Global Health Observatory Data. http://www.who.int/gho/tobacco/use/en/(Accesed at 18.07.2018).

[2] Fiore M, Jaen CR, Baker T, Bailey W, Benowitz N, Curry S, et al. Treating tobacco use and dependence: 2008 update. Rockville, MD: US Department of Health and Human Services. 2008.

[3] Prochaska JO, DiClemente CC. Transtheoretical therapy toward a more integrative model of change. Psychotherapy: Theory, Research, Practice, 1982; 19, 276-288.

[4] Fidanci I, Oztürk O, Unal M. Transtheoretical model in smoking cessation. J.Exp.Clin.Med., 2017; 34(1):9-13.

[5] Yalcin BM et al. Effects of an anger management and stress control program on smoking cessation: a randomized controlled trial. J Am Board Fam Med. 2014; 27(5):645-60.

[6] Ejerblad E, Fored CM, Lindblad P, et al. Association between smoking and chronic renal failure in a nationwide population-based case-control study. *J Am Soc Nephrol*. 2004; 15:2178-2185.

[7] Pinto-Sietsma SJ, Mulder J, Janssen WM, et al. Smoking is related to albuminuria and abnormal renal function in nondiabetic persons. *Ann Intern Med*. 2000; 133:585-591.

[8] Regalado M, Yang S, Wesson DE. Cigarette smoking is associated with augmented progression of renal insufficiency in severe essential hypertension. *Am J Kidney Dis*. 2000; 35:687-694.

[9] Samuelsson O, Attman PO. Is smoking a risk factor for progression of chronic renal failure? *Kidney Int*. 2000; 58:2597.

[10] Black HR, Zeevi GR, Silten RM, et al. Effect of heavy cigarette smoking on renal and myocardial arterioles.*Nephron*. 1983; 34:173-179.

[11] Oberai B, Adams CW, High OB. Myocardial and renal arteriolar thickening in cigarette smokers. *Atherosclerosis*. 1984; 52:185-190.

[12] Orth SR, Stockmann A, Conradt C, et al. Smoking as a risk factor for end-stage renal failure in men with primary renal disease. *Kidney Int*. 1998; 54:926-931.

[13] Ward MM, Studenski S. Clinical prognostic factors in lupus nephritis. The importance of hypertension and smoking. *Arch Intern Med*. 1992; 152:2082-2088.

[14] Cosio FG, Falkenhain ME, Pesavento TE, et al. Patient survival after renal transplantation: II. The impact of smoking. *Clin Transplant*. 1999;13:336-341.

[15] Kasiske BL, Klinger D. Cigarette smoking in renal transplant recipients. *J Am Soc Nephrol*. 2000;11:753-759.

[16] Sung RS, Althoen M, Howell TA, et al. Excess risk of renal allograft loss associated with cigarette smoking *Transplantation*. 2001;71: 1752-1757.

[17] Grønkjær M, Eliasen M, Skov-Ettrup LS, et al. Preoperative smoking status and postoperative complications: a systematic review and meta-analysis. Ann Surg. 2014; 259(1):52-71.

[18] Turan A, Mascha EJ, Roberman D, et al. Smoking and perioperative outcomes. Anesthesiology. 2011;114(4):837-846. 3. Hawn MT, Houston TK, Campagna EJ, et al. The attributable risk of smoking on surgical complications. Ann Surg. 2011;254(6):914-920.

[19] Siana JE, Rex S, Gottrup F. The effect of cigarette smoking on wound healing. Scand J Plast Reconstr Surg Hand Surg. 1989; 23(3):207–209.

[20] Sorensen LT, Jorgensen S, Petersen LJ, et al. Acute effects of nicotine and smoking on blood flow, tissue oxygen, and aerobe metabolism of the skin and subcutis. J Surg Res. 2009; 152(2):224–230. [PubMed: 18468640]

[21] FDA Drug safety communication: Updates label for stop smoking drug. https:// www.fda. gov/Drugs/DrugSafety/ucm436494.htm for (Last Updated at:02/26/2018)

[22] Myles PS, Leslie K, Angliss M, Mezzavia P, Lee l. Effectiveness of bupropion as an aid to stop smoking before elective surgery: a randomized controlled trial. Anaesthesia 2004; 59:1053-1058.

[23] Wong J, Abrishami A, Yang Y, et al. A perioperative smoking cessation intervention with varenicline: a double-blind, randomized, placebo-controlled trial. Anesthesiology. 2012;117(4):755-764.

[24] Carpenter et al. Clinical strategies to enhance the efficacy of nicotine replacemet therapy for smoking cessation: A review of the literature. Drugs. 2013;73(5):407-426

[25] Jacobi J, Jang JJ, Sundram U, Dayoub H, Fajardo LF, Cooke JP. Nicotine accelerates angiogenesis and wound healing in genetically diabetic mice. Am J Pathol. 2002;161(1):97-104.

[26] Morimoto N, Takemoto S, Kawazoe T, Suzuki S. Nicotine at a low concentration promotes wound healing. J Surg Res. 2008; 145(2):199-204.

[27] Martin JW, Mousa SS, Shaker O, Mousa SA. The multiple faces of nicotine and its implications in tissue and wound repair. Exp Dermatol. 2009; 18(6):497-505.

[28] Nolan MB, Warner DO. Safety and efficacy of nicotine replacement therapy in the perioperative period. A Narrative Review. Mayo Clin Proc.2015; 90(11):1553-1561

[29] Fiore MC, Jaen CR, Baker TB, et al (2008). Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline. Rockville, MD: US Department of Health and Human Services. Public Health Service. May 2008 pp. 47-8, 52-3. http://www.surgeongeneral.gov/ tobacco/treating_tobacco_use08.pdf

Citation: *Bektas Murat Yalcin, Esra Yalcin. Case Presentations: The Emergency Smoking Cessations. A Patient before Kidney Transplantation and a Patient with Finger Microsurgery after Amputation. ARC Journal of Addiction. 2018; 3(2): 52-56*