Short term effect of smoking cessation on human metabolism

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METHODS

The trial was designed as a two-arm study - prospective and retrospective.

The study was approved by the Meuhedet HMO Ethics Committee according to the ethical guidelines of the Helsinki Committee.

Prospective Arm

Studied population

The prospective arm included 108 participants aged 30-70 who were recruited from the smoking cessation workshops of the Meuhedet HMO (Israeli Health Services) during 2016-2017. Candidates with benign tumors, bariatric surgeries, and endoscopic bariatric procedures before or during the study period were excluded.

Study design

All subjects signed informed consent to participate, after receiving detailed information about the study objectives and procedure. The collected data included weight, BMI, waist circumference and Waist Hip Ratio (WHR) at 3 time points: a. the third weekly meeting of the cessation workshop, pre-cessation phase (baseline- **phase 0**), b. workshop's last meeting (the eighth weekly cessation meeting – **phase 1**) and 6 months after the cessation program (**phase 2**). The effects of smoking cessation support medicines was also examined.

Anthropometric measurements

Weight was measured with participants standing up, wearing light clothes and without shoes, using a digital scale. Waist circumference was measured above

the iliac crest. Hip circumference was taken at the maximum circumference between the groin and the iliac crest. Height data were based on participants' self-report. Participants were classified as smokers (S), quitters (Q) and re-smokers "relapsers" (RS) based on self-reported data at each visit. Participants also completed a questionnaire regarding cigarette-smoking habits and health information. The numerical value of pack years was calculated based on that questionnaire (Pack years is a unit quantifying the lifetime exposure to smoking, calculated by multiplying the number of packs of cigarettes smoked per day by the number of years the person has smoked).

Retrospective Arm

Studied population

The retrospective arm presented a file review of 200 patients between 25-70 years of age, who participated in smoking cessation workshops of the Meuhedet HMO in 2014.

Candidates with benign tumors, bariatric surgeries, and endoscopic bariatric procedures before or during the study period were excluded, as well as those who were unavailable for a phone conversation.

Study design

Two blood test results, as documented in medical files, were collected and analyzed. The first one during the year preceding the smoking cessation workshops (baseline- **phase 0**), and the second during the year after completing them. Smoking status was verified by a telephone call. Participants were classified as smokers (S) and quitters (Q).

The effect of smoking cessation medications on metabolic profile was also examined.

Metabolic measurements

File recorded blood measurements were used for Fasting Glucose (BFG), Total Cholesterol (TC), HDL Cholesterol (HDL), LDL Cholesterol (LDL) and triglycerides (TG) as examined in HMO laboratories. Results were analyzed according to WHO criteria.

STATISTICAL ANALYSIS

Data was analyzed using JMP Pro 12 and R software. Mean values and their standard error (SE) were used to summarize the distribution of continuous variables. To determine significant statistical differences between two sets of data with normal distribution we used Student's t-test/ ANOVA. For paired sets of data that may not be normally distributed we used the Wilcoxon signed rank test, and for unmatched sets-, the Mann Whitney's u-test was used. Each patient constituted his own control – each post workshop result was compared with the pre workshop result.

Fisher's proportion test was used to determine significant statistical differences between proportions in a given compatible groups. $P<0.05$ was considered significant. All statistical tests were two tailed.