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Tobacco smoking in women with the special regard of the pregnancy

Palenie tytoniu u kobiet ze szczególnym uwzględnieniem okresu ciąży

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Abstract

Cigarettes are known in Europe from XV age. Almost 38 percent adult men smokes and 23 percent adult women in Poland at present. Smoking of women increases quantity gradually on the breakthrough of years unfortunately. Cigarette smoking is known to be responsible for the death of over 0.5 million women each year and is the most important preventable or avoidable cause of premature female death. Several gynecological and obstetric problems such as cervical cancer, abortions, ante-partum hemorrhages and low birth weight are much more common among smoking females. Women smoke from different incentives than men. This paper was introduced negative influence of women smoking, especially in pregnant women. Active and passive smoking during pregnancy is an important health problem. The majority of pregnant smoker women continue smoking during pregnancy. The association between maternal smoking and retarded maternal condition and birth outcome is well know. Smoking during pregnancy increases risk of spontaneous abortion, placenta previa, abruptio placenta,

preterm premature rupture of membranes, stillbirth, preterm delivery and sudden infant death syndrome. The recently conducted studies also indicate that prenatal exposure to tobacco smoke is a risk factor for respiratory infections, asthma, allergy, childhood cancer. The problem of cigarettes concerns not only women in the pregnancy, but also feedings because many toxins coming from cigarettes to milk. It is important that pregnant women are warned of the detrimental effects of smoking, and encouraged to abstain for healthy fetal development.

Key words: woman, smoking of tobacco, pregnancy

Streszczenie

Papierosy znane są w Europie od wieku XV. Obecnie w Polsce pali prawie 38% dorosłych mężczyzn oraz 23 % dorosłych kobiet. Niestety na przełomie lat stopniowo zwiększa się ilość palących pań; Wiadomo, że palenie papierosa jest odpowiedzialne za śmierć ponad 0.5 miliona kobiet każdego roku i jest to najważniejszą przyczyną przedwczesnej śmierci u kobiet do uniknięcia. Również nawyk ten związany jest z wysokim tempem chorobowości wśród palaczek w porównaniu z niepalącymi kobietami. Wiele schorzeń ginekologicznych i położniczych pojawia się częściej wśród kobiet palących jak: nowotwór złośliwy szyjki macicy, poronienia, krwotoki w trakcie ciąży i niska masa urodzeniowa. Kobiety palą z innych pobudek niż mężczyźni. W pracy tej przedstawiono negatywny wpływ nikotynizmu u kobiet szczególnie u kobiet ciężarnych ciężarne. Aktywne i bierne palenie podczas ciąży jest ważnym problemem zdrowia. Większość kobiet kontynuuje palenie podczas ciąży. Palenie podczas ciąży powoduje wzrost samoistnych poronień, wystąpienia łożyska przodującego, przedwczesne odklejenie łożyska, przedwczesne odpłyniecie płynu owodniowego, martwe urodzenie, poród przedwczesny i zespół nagłej śmierci noworodka. Ostatnio prowadzone badania również wskazują, że prenatalna ekspozycja na dym tytoniowy jest czynnikiem ryzyka dla infekcji oddechowych, astmy, alergii, nowotworu złośliwego występującego w okresie dzieciństwa. Z drugiej strony u kobiet, które zaprzestały palenia podczas ciąży zmniejsza się ryzyko wystąpienia większości tych patologii. Problem papierosów dotyczy nie tylko kobiet w ciąży, ale również karmiących bowiem w mleku także znajduje się wiele toksyn pochodzących z papierosów. Ważne jest, żeby kobiety ciężarne były ostrzegane przed szkodliwością palenia tytoniu i zachęcane, by powstrzymać się dla zdrowego rozwoju płodu.

Słowa kluczowe : kobieta, palenie papierosów, ciąża

Introduction

Christopher Columbus reached America and was given a tobacco plant by Indians in 1492. Nobody knows that this plant will cause in the future so many diseases in the whole world and these diseases will be the cause of every 10th death in the world [1]. Cigarettes are known in Europe since XV century. Ambassador Jean Nicot put them into circulation- that's why they are called nicotine. In 1650 Polish ambassador in Turkey, Paweł Uchański, had brought nicotine to Poland [2].

The leaves of the tobacco contain the nicotine – the very strong alkaloid, which shrinks the wall of blood vessels, enlarges the pressure of the blood and causes the disorders of the rhythm of the heart. In the tobacco leaves except nicotine there is a whole scale of toxic substances - carbon monoxide, hydrogen cyanide, pitchy substances, nitric derivatives of saccharides, phenols, polonium, formaldehyde, arsenic, cadmium, aniline). Nicotine is the colourless liquid which changes under the influence of the air on the yellow colour. The drop of nicotine, about 50 mg, is the lethal dose.

This addiction related first of all to men initially, women also reached for cigarettes gradually.

Epidemiology:

Almost 38% adult men and 23% adult women smoke according to data from 2004 in Poland. The number of smoking ladies is increasing and it is said, that in the future there will be twice as many smoking women than men.

Cigarette smoking is known to be responsible for the death of over 0.5 million women each year. In Poland smoke over 4 million women; most of them are in reproductive age. Half of them smokes every day and don't quit during pregnancy [2].

Effects of smoking cigarettes:

Several epidemiological studies indicate that maternal smoking during pregnancy might induce a predisposition in the offspring to start smoking later in life[3]. In a 13-year follow-up study of 6- to 18-year-old children, the conclusion was that maternal smoking during childhood increases children's risk of becoming young adult smokers, independent of paternal smoking, parents' education and household income. In Denmark 28% of smoking in young adults could be attributed to maternal smoking. In another study, analysis of 979 mother-child pairs showed that maternal smoking during pregnancy selectively increased the probability

that female children would become smokers while no such effect was found for male offspring. A prospective study showed that maternal smoking during pregnancy was significantly associated with an increased risk of the child's tobacco experimentation. Offspring exposed to more than 1/2 pack per day during gestation had a 5.5-fold increased risk of starting to smoke. Initiation of smoking during adolescence is associated with a higher daily consumption and a lower probability of quitting. Since nicotine stimulates the actions of cholinergic neurones and enhances activity in dopaminergic systems involved in addictive behavior, it is quite plausible that nicotine can affect the fetus, perhaps through the nicotine input into the mesolimbic dopaminergic reward system, so as to predispose the brain in a critical period of its development to the subsequent addictive influence of nicotine consumed later in life. The prenatally induced predisposition to smoking might be enhanced further after birth by passive smoking and/or by nicotine in the breast milk. Due to its lipophilic character, nicotine rapidly passes into human milk, where it builds up concentrations three times as high as in the blood. Pregnant women are already at an increased risk of cardiovascular events, including acute myocardial infarction, stroke, and venous thromboembolism, compared with women who are not pregnant. In previous case-control studies we performed using the same database and comparing women who experienced cardiovascular events during pregnancy with those who did not, we identified smoking as a risk factor. The additional risk of cardiovascular events conferred by smoking is over and above the risk conferred by pregnancy. Smoking cigarettes cause many diseases: cancer of oral cavity, pharynx, oesophagus, larynx, lung, renal pelvis, urinary bladder and pancreas. Smoking is the main risk factor of COPD (chronic obstructive pulmonary diseases) and can cause diseases of circulatory system- myocardial infarction, arterial hypertension, aortic aneurysm, cerebrovascular and peripheral vessels diseases. The risk of insulin-dependent diabetes and obesity is also higher.

Several gynaecological and obstetric problems such as inflammation of reproductive organs, dysplasia (CIN I-III), cervical cancer are more often when woman smokes. It is known that if woman smokes, the gentle dysplasia more frequent transforms into the severe dysplasia and the cancer of the neck of the uterus. It was not described however the negative influence of nicotynism on more frequent occurrence of the cancer of the trunk of uterus and the cancer of the breast. It's result probably from the fact, that these tumours are dependent from estrogens and the nicotine causes decrease of rigor of this hormone [2].

Smoking cigarettes causes lack of estrogens which makes an earlier menopause. When a women smoke a premenstrual tension is observed and it's treatment is more difficulty[2].

Smoking women should't take a contraceptive oral drug because of the higher risk of changes thrombotic and embolic. Moreover women addicted to cigarettes need higher dose of these drugs to treatment [2] Smoking may also affect fertility- it's concern both active and passive smokers[4].

Toxic influence of nicotine on sperm can cause a decrease of total sperm count and genetic disorders[5]. Nicotine in mucus of uterine cervix may slow down sperms and cause difficulties in fertilization[2].When pregnant women smoke toxic substances in cigarette influence on fetus. Smoking cause many early and distant complications in fetus. [Table 1]

Smoking cigarettes have negative influence on placenta , may cause a local necrosis of syncytiotrophoblast and destroy microvillus. The number of collagen increases, the placental barrier is destroyed and transport an oxygen and nutrients are disturbed[6]. The placental insufficiency results in premature birth and/or hypotrophic fetus (IUGR and SGA – small gestational age) [7].

Smoking during pregnancy may also cause shortening of the gravidity, a risk of prematurity and many other complications (deficiency of the body mass and growth, respiratory failure, jaundice of the newborn, retinopathy). A risk of birth before 35 weeks is higher when a woman smokes 10 cigarettes a day [8]. A percentage of premature birth is 11,5% if woman smokes and 7 % if they don't smoke [2]. Hypotrophy means that a child is born smaller than it should be. Reduction of the mass results from reduction of lean body mass. It's concern both active and passive smokers [8].

In the study led in Cathedral and Clinic Obstetrics, Feminine Diseases and Oncological Gynaecology with the Department of New-born Children and Premature Infants with Intensive Therapy of New-born Child Collegium Medicum in Bydgoszcz in 2007 one hundred children of healthy women were examined. They were born in time. The body mass of children which mother were smoking were smaller about the average 310 g [9]. In other studies body mass was smaller, about 250 g (117- 390 g).

Hypotrophic children compensate the shortage of the mass however they are burdened the risk of the development in future the diabetes of the type II, arterial hypertension and ischemic heart disease. In many studies dependence between smoking cigarettes by pregnant women and the possibility of the cerebral hemorrhage at their children is published. It is connected to the chronic anoxaemia which these children experience. This risk is larger at premature infants [8].

The next result of mother's nicotine addiction is SIDS, that is the sudden infant death syndrome. It is considered that the risk of SIDS grows together with the degree of the immaturity of the

foetus. That's why the low birth weight is treated as the independent factor of the risk of SIDS. The small birth weight means organ's immaturity and the smaller functional reserves of the system. It can cause immaturity of organs and less functional reserve. It all can cause the disfunction of the central nervous, especially in the range of the circulatory and respiratory action.

The next risk factor of SIDS is an active and passive smoking of the tobacco by mother and this risk increases together with the number of burnt daily cigarettes. It is resulted from the toxic influence of nicotine on the mechanism of the respiratory drive and enlarged sensibility on hypoxia[10]. The lung compliance of children of the smoking mothers is change.

Mother's nicotinism also causes distant negative results at children. It was described many times, that if the child is exposed on nicotine in the fetal age the incidence of allergic and inflammable diseases of respiratory system is larger [11,12]. Exposure to prenatal smoking increases risk for overweight in childhood. The association was unaffected by adjustment for parental sociodemographic factors and body size, gestational weight gain, infant feeding, and child behaviors, indicating that social and behavioral differences between smokers and nonsmokers are not likely to account for the observed differences in overweight risk. In all of the studies, smoking during pregnancy was associated with increased overweight in offspring, despite a wide range of populations, smoking habits, birth years, and overweight prevalence. Compared with children of nonsmokers, children exposed to prenatal smoking may be heavier, shorter or both.

The risk of corysa and subacute otitis media also grows when pregnant woman smokes [13, 14]. Occurrence of neoplasma in children which mothers smoke during pregnancy was analysed in particular epidemiological studies. Children of smoking mothers more often suffered from lymphoblastic leukemia [15].

Oken et al have evaluated additional endpoints related to overweight. Single studies have suggested that individuals exposed to prenatal smoking may have greater weight gain from birth to age 2 years, earlier puberty, elevated risk for diabetes mellitus, and exhibit a high-risk cluster of low birth weight and higher attained BMI or of higher BMI, blood pressure, lipids, and glucose levels. Several investigators have studied associations between prenatal smoking exposure and blood pressure in childhood. In the studies that accounted for sociodemographics and other characteristics including child size, systolic blood pressure was consistently about 1 mm Hg higher among children who were exposed to prenatal maternal smoking [16].

In many studies behavioural disorders of children which mothers had smoked during pregnancy were described [17]. The children of the smoking women may have problems with the reading and science. Smoking cigarettes during pregnancy can also cause ADHD (attention deficit hyperactivity disorder). This syndrome usually begins in the first five years of the life, characterizes excessive motility, impulsiveness, the disorders of the concentration of the attention and has influence to many fields of the social life. People with ADHD moreover are more subject on poisonings and injuries [18].

The connection between smoking cigarettes by mothers in pregnancy and intelligence quotient (IQ) was also described in the literature. The 4- year children of smoking mothers (women smoked during pregnancy over 10 cigarettes a day) had the lower intelligence quotient from non-smoking mothers [8, 19].

The problem of nicotinism also concerns women after the delivery- when mother smokes many poisonous substances from the tobacco smoke passes on through milk. The nicotine in milk can cause an insomnia, diarrhoeas, vomiting and the disorder of the circulatory system of the child. Moreover if woman smokes she usually quickly stops to breast- feed because nicotine influences on production of prolactine negatively. Moreover children of smoking mothers weakly put on weight [2, 20].

Because of the fact, that women have the smaller volume of lungs and the larger smoke concentration keeps at them, smoking of the cigarettes damages to women more than to men. Moreover addiction to nicotine at women has different basis than at men- men smoke because they are bored, women however reach for the cigarette in stress situations to calm down. For women there is harder to stop smoking because of the fear of putting on a weight. This results probably from strong psychical dependence from nicotine. That is why both woman and men need various techniques helping quit smoking.

Pregnancy is the motive to stop smoking very often [8, 21]. Large knowledge about the harmfulness of the smoking cigarettes induces women to the cessation of the smoking on the period of pregnancy and lactation more often.

Our task as doctors is to help patient dependent from nicotine to stop smoking.

One of methods is so called The Minimum Antytytonic Intervention (MAI) - this is the short conversation which lasts few minutes and contains a medical advice [22].

It's aim is:

- 1- to identify the smoker of cigarettes,
- 2- to propose how to quit smoking.

The principle of MAI concerns active and passive smokers. [Table 2.] Conversation about the addiction with the proposal of the therapy the doctor should carry out during every visit. The questionnaire of Fagerstrom test, is the nicotine dependency test which helps to determine the level of nicotine addiction. [Table 3.]

The maximum number of points carries out 11. If patient acquires 0-4 point it means that he is not pharmacological (biological) dependent from nicotine or it's the very "low" level of dependence. If patient acquires 5-8 points it means that he is moderately dependent from nicotine, however the 9-11 points means highly dependent from nicotine.

There are various methods of the therapy :

- self-control
- MAI
- group therapy
- behavioural methods
- the pharmacological treatment for example the nicotinic substitutive therapy (slices including nicotine, chewing gum including nicotine, nicotinic inhaler, pastils and tablets including nicotine, herb medicines - cytisine). We have also others drugs - bupropion and varenicline

Conclusion

Maternal smoking during pregnancy increases risk for overweight in childhood. These findings add to the recognized health burden from tobacco, already estimated at almost 5 million deaths per year. The overall population impact of a 50% increased risk of overweight is likely to be large. In the US, where 11% of pregnant women currently smoke and child overweight is highly prevalent, about 715 000 US children may be overweight because their mothers smoked. Individuals who are born small and later become obese are at highest risk for developing cardiovascular disease. This phenotype, typical of exposure to maternal prenatal smoking, is also characteristic of parts of the world undergoing the nutritional transition to high fat diets and sedentary lifestyle and the accompanying epidemiologic transition to chronic diseases associated with obesity. In such populations, the combination of poor maternal nutrition, lower birth weight, and increasing adoption of a western lifestyle heralds an explosion in obesity and cardiovascular disease that may well intensify if young women respond to tobacco companies' advertisements targeting them. The knowledge about side effects of smoking is large. This problem concerns not only men, but also women, especially pregnant. Nicotin influences both mother and a child. The most

important is to educate young girls and spread a fashion of non- smoking. Consequences of smoking cigarettes feel not only our but also next generation.

Tables

Table 1 Smoking women and early and distant complications in fetus.

Early complications	Distant complications
Placenta praevia	Risk of asthma, infectious diseases and neoplasm of the lung
Premature detachment of the placenta	Attention-deficit/hyperactivity disorder
Premature detachment of the amniotic sac	(ADHD)
Spontaneous abortion	Negative influence on neuro- behavioral development
Premature birth	
Hypotrophic fetus	
Cerebral haemorrhage	
Sudden Infant Death Syndrome (SIDS)	

Table2. The principle Minimum Antitytonic Intervention [MAI]

ASK	During every visit ask the patient if he smokes
ADVISE	Advise the patient to stop smoking
JUDGE	Judge the willingness to stop smoking
HELP	Give the specialist medical advice
PLAN	Plan the farther treatment

Table 3. The questionnaire of Fagerstrom test

Questions	Answers	Points
1. How soon after you wake up do you smoke your first cigarette?	Within: 5 minutes	3
	6-30 minutes	2
	31-60 minutes	1
	After 60 minutes	0
2.Do you find in difficult to refrain from smoking where it is forbidden: church, library, cinema...etc?	Yes	1
	No	0
3.Which cigarette would you most hate to give up?	The first one in the morning	1
	Any other	0
4. How many cigarettes /day do you smoke?	10 or less	0
	11-20	1
	21-30	2
	31 or more	3
5.Do you smoke more frequently during the first hours after waking than during the rest of the day	Yes	1
	No	0
6. Do you smoke if you are so ill that you are in bed most of the day	Yes	1
	No	0

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