Acta Paediatrica Hungarica 30 (2) pp 163-167 (1990)

PASSIVE SMOKING IN UTERO: NO OBJECTIVE MORPHOGENETIC CHANGES IN THE NEONATE

K. MÉHES and B. PEJTSIK*

Department of Paediatrics, University of Pécs;
*Baranya County Hospital, Pécs, Hungary

Received 1 March 1989

The relationship between smoking during pregnancy and minor morphogenetic and anthropometric variants of the fetus was investigated in a case-control study. Sixty infants of mothers admitting to have smoken more than 20 cigarettes a day during pregnancy were matched to 120 infants of non-smoking mothers. No differences in the prevalence of 54 informative morphogenetic variants and in the values of 31 anthropometric measurements and indices were found.

INTRODUCTION

The effect of smoking during pregnancy on the fetus has long been investigated, however, controlled studies on its effects on fetal morphogenesis are hardly available. Recently Stirling et al. /6/ reported that newborn infants born to mothers who smoked could be distinguished from those born to non-smokers by their facial appearance alone. Since selection was merely intuitive in their survey, we made an attempt to evaluate the effect of passive smoking in utero by means of objective measurement and assessment of informative morphogenetic variants.

SUBJECTS AND METHODS

In the frame of the computerized Baranya Pregnancy Surveillance Programme, 60 healthy full-term newborn infants (27 girls and 33 boys) were selected whose mothers admitted to have smoken at least 20 cigarettes a day during the whole

Akadémiai Kiadó, Budapest

pregnancy. The range of birth weights was 2350-3820 g, the mean being 3015 g; 23 children were gypsies, the others white Hungarian infants. Their age at examination varied between 1 and 15 months with a mean of 7.3 months.

To each member of the study group two infants of non-smoking mothers were matched consecutively by sex, age and ethnic origin. The birth weight of these babies was higher (mean 3310 g), however, at the time of examination this difference diminished to a non-significant level.

For each subject the presence or absence of 54 informative morphogenetic variants (minor congenital malformations and anomalies), recently listed and defined /3/, was recorded. At the same time, 31 anthropometric parameters and the index values calculated from them were determined and evaluated according to our local standards /3/ and to the charts of Feingold and Bossert /1/ and Merlob et al. /4/. The physical examination and anthropometric measurements of the infants were carried out by the same investigator (K.M.) who, with the exception of 19 subjects, was not aware to which group the child belonged.

RESULTS

As shown in Table I, no difference in the anthropometric indices between the two groups was found. Similarly, the mean number of informative morphogenetic variants per child and the distribution of infants with 0, 1, 2, and more anomalies in the group of "smokers" did not significantly differ from those of the control children (Table II). No specific features were identified that distinguished the two groups of infants. Epicanthic folds, clinodactyly of the 5th finger, and double posterior hair whorls were the most common informative morphogenetic variants in both groups, more than half of them being harmless familial signs seen also in one of the parents.

In two children some features of the fetal alcohol syndrome: short palpebral fissure, depressed nasal bridge, hypoplastic philtrum and nail hypoplasia were noticed, although their mothers disclaimed alcohol consumption.

DISCUSSION

Smoking is associated with reproductive problems including difficulty in conceiving, spontaneous abortion, stillbirth, preterm birth and especially low birth weight. This could also

TABLE I

Selected anthropometric indices (mean ± S.D.)

	"Smokers" n = 60	Controls n = 120
Head length index	0.34 ± 0.01	0.34 ± 0.02
Head width index	0.27 ± 0.01	0.26 ± 0.01
Cephalic index	77.8 ± 4.7	76.9 ± 3.9
Inner canthal index	6.1 ± 0.7	6.2 ± 0.6
Arm upper segment index	0.46 ± 0.01	0.45 ± 0.02
Middle finger index	0.42 ± 0.02	0.43 ± 0.01

TABLE II

Prevalence of informative morphogenetic variants (IMVs) in the infants examined

		"Smokers" n = 60		Controls n = 120	
		n	%	n	%
IMV	0	36	60.0	69	57.5
	1	13	21.7	29	24.2
	2	8	13.3	19	15.8
	3 and more	3	5.0	3	2.5
Mean IMV per child		0.65		0.64	

be confirmed in our South-Hungarian region /2/.

The effect of smoking on morphogenesis has not yet been clarified. However, the observations made so far suggest that there is no significant increase in the prevalence of major malformations among the babies of smokers /5/. It is still disputable how far informative morphogenetic variants (dysmorphic features, minor anomalies) can be utilized in teratogenicity research. In the present study meticulous investigation did not reveal an increase in the incidence of morphogenetic variants or an occurrence of specific minor disorders in infants of smoking mothers. Considering the anthropometric data a significant adverse effect of smoking on fetal craniofacial and limb development seems most unlikely. Although our approach differed from that of Stirling et al. /6/, we could not confirm their findings: utilizing methods used by syndromologists we could not distinguish infants born to mothers who smoked from those born to non-smokers.

When evaluating dysmorphology in individual cases, the effect of other factors often associated with smoking, such as alcohol consumption, should also be considered.

REFERENCES

1. Feingold M, Bossert WH: Normal values for selected physical parameters: An aid to syndrome delineation. Birth Defects Orig Art Ser 10/13: 1, 1974

2. Kóbor J, Pejtsik B, Járai I, Pados É, Horváth M, Csébfalvi G: Effect of smoking during pregnancy on the birth-weight percentile values (Hungarian). Orv Hetil 129: 21, 1988

3. Méhes K: Informative Morphogenetic Variants in the Newborn Infant. Akadémiai Kiadó, Budapest, 1988

4. Merlob P, Sivan Y, Reisner SH: Anthropometric measurements of the newborn infant (27 to 41 gestational weeks). Birth Defects Orig Art Ser 20/7: 1, 1984

5. Shiono PH, Klebanoff MA, Berendes HW: Congenital malformations and maternal smoking during pregnancy. Teratology 34: 65, 1986

6. Stirling HF, Handley JE, Hobbs AW: Passive smoking in utero: its effects on neonatal appearance. Brit Med J 295: 627, 1987

K. MÉHES MD
József Attila u.7.
H-7623 Pécs, Hungary