

explain the incidence of low birth weight babies born to this group. Cytotrophoblastic hyperplasia had been observed to be significantly increased in placental villi of smoking mothers by Naeye¹⁴. This was explained to be the consequence of degenerative changes in the syncytiotrophoblast which induces cytotrophoblast differentiation and ultimately syncytial fusion. In the present study such hyperplasia was also observed which might be essential for maintenance of functional and structural integrity of the overlying syncytial layer. Mayhew et al¹⁵ observed similar cytotrophoblastic hyperplasia of mothers from several pathological causes related to hypoxia such as anaemia and pregnancies at high altitude. So it can be concluded that reduced supply of oxygen damages the syncytiotrophoblastic layer which in turn induces cytotrophoblastic proliferation.

Thickened trophoblastic and endothelial cell basement membrane at sites of VSM as found in our study were reported by Demir et al. since both TMBM and EBM act as important components of the filtration barrier at VSM. Their apparent thickening in smokers placenta reduces blood flow to fetal side thus hampering fetomaternal transport.

Cytoplasmic organelles like numerous mitochondria and dilated rER were observed in the cytotrophoblast in active and passive smokers and also tobacco chewers. Such observations were supported by studies of Kaufmann¹⁶. Presence of mitochondria and rER are speculated to be involved in more complex and active maternofetal transfer mechanisms including metabolism and synthesis of proteins and lipids and it may be interpreted as a sign of increased energy requirements, since mitochondria is known to be the site for oxidative phosphorylation and ATP synthesis. Naeye¹⁴ have studied the stromal aspect in case of smokers placenta, and reported stromal fibrosis and increased collagen content. In our ultrastructural study, we noticed an increased intervention of stromal tissue at sites of VSM, but no remarkable difference was noticed in all three subgroups of smokers placenta.

The observed changes in almost all components of VSM in active, passive smokers and tobacco chewers in the present study are suggestive of the fact that transfer of essential nutrients, fluids and gases were compromised between the mother and fetus resulting in adverse fetal outcomes like IUGR, low birth weight babies and still births. But it is also known that all babies born to tobacco using mothers do not suffer from such health hazards. This may be supported by the fact reported by Kameya et al¹⁷ and Scheibler et al¹⁸ that thickened VSM are known to possess hydrolytic enzymes like alkaline phosphatase, 5 nucleotidase and ATPase which are involved in active transfer of nutrients. Thus the increased thickness of VSM in placental villi of tobacco users may compensate the fetal intake of important gases, water, amino acids, electrolytes etc. by actively transporting them from the maternal side, whose transfer to the fetus by the process of passive diffusion is otherwise reduced due to decrease in number of vasculo syncytial membrane (VSM). Further molecular analysis of the components of VSM, may be beneficial to support this study.

CONCLUSION

The ultrastructural changes observed in this study on the components of placental vasculosyncytial membrane support the fact that diffusional transfer of gases and nutrients from mother to fetus is highly impaired in tobacco consuming mothers. Thus tobacco consumed in any form either by active and passive smoking or by chewing tobacco products is greatly injurious to both fetus and newborn resulting inevitable adverse sequelae like IUGR, LBW babies etc, which can be safely avoided by abstaining from consuming tobacco during pregnancy.

ACKNOWLEDGEMENT

We thank Mrs A.R. Shrivastav and Mrs Anita for providing technical help in the electron microscopic experiments. The work is supported by the Indian council of medical research (ICMR, New Delhi, Grant no.: 5/7/107/94 RHN. Dated 08-09-1999).

REFERENCES

1. Voigt M, Straube S, Fusch C, Heineck G, Olbetz D and Schndier KTM. The shortening of the duration of pregnancy due to smoking and associated costs for perinatal health care in Germany. *Z Geburshilfe Neonatol*;2007;6:211:204-21
2. Genbacev O, McMaster MT, Lazic J, Nedeljkovic S, Cveticovic M, Joslin R and Fisher SJ. Concordant *in situ* and *in vitro* data show that maternal cigarette smoking negatively regulates placental cytotrophoblast passage through the cell cycle. *Reproductive toxicology*;2000;14:495-506
3. Vander Velde WJ, copius Peereboom-Stegeman JH, Treffers PE and James J. Structural changes in the placenta of smoking mothers : a quantitative study. *Placenta*;1983;4:231-240
4. Demir R, Demir AY and Yinae M. Structural changes in placental barrier of smoking mother-A quantitative and structural study. *Pathology research and practice*. 1994;190:656-667.
5. Fox H and Bltco AA. Scanning electron microscopy of the human placenta in normal and abnormal pregnancies. *Eur.J.Obstet Gynecol*;1974;4:45-50
6. Benirschke K and Kaufmann P. *Pathology of the human placenta*. 4th edition; Springer-Verlag. New York;2000.
7. Vander Veen F and Fox H. The effects of cigarette smoking on the human placenta: a light and electron microscopic study. *Placenta*;1982;3:243-256
8. Vander Velde WJ and Treffers PE. Smoking in pregnancy : the influence on percentile birth weight, mean birth weight, placental weight, menstrual age, perinatal mortality and maternal diastolic blood pressure. *Gynecol Obstet*;1985;19:57-63.
9. Burton GJ, Palmer ME and Dalton KJ. Morphometric differences between the placental vasculature of non smokers and ex-smokers. *British Journal of Obstetrics and Gynaecology*;1989;96:907-915.
10. Karkudkar MD, Deshpande NM, Shete SS and Zavar MP. Placenta in PIH. *Indian J Pathol Microbiol*;2007;50(3):493-497.
11. Pietryga M, Biczysko W, Wender-Ozegowska E, Brazert J, Beigansk E and Biczysko R. Ultrastructural examination of the placenta in pregnancy complicated by diabetes mellitus. *Ginekopol*;2004;75:111-118
12. Dimitrovska N. Characteristic of vasculosyncytial membranes in human chorioplacental villi. *Jugosl. Ginekol. OPstet*;1978;18:279-284
13. Bachmaier N, Linnemann K, May K, Warzok R, Kuno S, Niemeyer M, Balk S and Jusch C. Ultrastructure of human placental tissue after 6h of normoxic and hypoxic dual *in vitro* placental perfusion> *placenta*;2007;28:861-867.
14. Naeye RL. Relationship of cigarette smoking to congenital anomalies and perinatal death- A prospective study. *American Journal of Pathology*;1978;90:289-293.
15. Mayhew TM, Jackson MR, and Hass JD. Oxygen diffusive conductances of human placenta from term pregnancies at low and high altitude. *Placenta*;1990;11:493-503
16. Kaufmann P. Influence of ischemia and artificial perfusion on placental ultrastructure and morphology. *Contrib. Gynaecol. Obstet*;1985;13:18-26
17. Kameya T, Watanabe K, Kobayashi I and Merkojima. Enzyme and immunohistochemical localization of human placental alkaline phosphatase. *Acta Histochem. Cytochem*;1973;6:124-136
18. Schiebeler TH and Kaufmann P. In *Die Plazenta des Menschen*, V. Becker and Kubli F. eds. Georg Thieme, Stuttgart;1981:51-100.

Conference News



8th INTERNATIONAL CONFERENCE ON GERIATRIC CARE (GSICON) (Under the Aegis of GSI)
5th-6th November, 2011

Venue: Govt. Medical College and Guru Nanak Dev Hospital, Amritsar, Punjab, India

Theme: "A Comprehensive Health Care (Medical, Nursing, Social and Spiritual) of Elderly"

Important features: (i) FELLOWSHIP CEREMONY; (ii) Best paper award. The International Speakers will include Dr. Navin C. Nanda (USA), Dr. Anil Mandal (USA), Dr. Harpal Singh Buttar (Canada), Dr. Mohammed Saklayen (USA), Dr. D.W. Wilson (UK), Dr. A.P.S. Hungin (UK), Dr. Brian Tomlinson (Hong Kong), Dr. A.A.S. Majumdar (Bangladesh), Prof. Shaena Asif (Pakistan), Dr. Hari Shankar Sharma (Sweden), Dr. A.C. Potwary (Nepal) & Dr. Attoshhe Rohani (Iran). National Faculty includes experts of eminence in Geriatric Medicines.

Kindly send the abstracts (oral & poster) to Dr. N.S. Neki before Sept 30, 2011. Registration details are given in table. For Details Contact Dr. N.S. Neki, Organising Chairman, Conference Secretariate: House No. 88, Gali No. 4, Gopal Nagar, Majitha Road, Amritsar, Punjab, India (M): +91-98724-13788, 95010-29128, (R): +91-183-2426065

E-mail: dmsneki_123@yahoo.com



Registration Details:

Category	UPTO 30 th Sept. 2011	1 st Oct To 31 st Oct 2011	1 st Nov 2011 onwards
GSI Member	1200/-	1600/-	2000/-
Non Member	1500/-	1900/-	2500/-
Accompanying person	1000/-	1500/-	2000/-
PG students	900/-	1200/-	1500/-
Nurses	500/-	700/-	900/-
Nursing Faculty (Lect., AP, Prof.)	1000/-	1400/-	1800/-
International Delegate	300 US\$	400 US\$	500 US\$