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Transmission of Respiratory Anaphylaxis (Asthma) From Mother to Offspring.*

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We have recently demonstrated[1] that when guinea pigs are subjected to an organic dust-laden atmosphere, after a certain incubation period, they will become highly sensitized to the substance which they have inhaled. Prior to our work, it was thought that nasal sensitization could be brought about only through the insufflation of solutions. It was our privilege to prove that this sensitization could be induced through the inhalation of a dry substance (horse dander). We ventured the opinion that this particular demonstration proved that respiratory anaphylaxis in the guinea pig and bronchial asthma in the human being should be regarded as identical conditions.

In a further series of experiments[2] we have shown that a guinea pig sensitized prior to or during pregnancy will sensitize her offspring *in utero,* and that this mechanism is dependent entirely upon the permeability of the placenta.

Thus we have shown 2 ways in which sensitization may be brought about; first by the absorption of inhaled dry substances through the upper respiratory tract; and second by the transmission of sensitizing substances from the circulation of a pregnant mother to the circulation of the fetus.

In the present work, we have taken guinea pigs before and during pregnancy, and produced respiratory anaphylaxis (asthma) in them. We studied 26 guinea pig families in all, and in 20 of these we were able to produce respiratory anaphylaxis in the mother. In 18 of these families this respiratory anaphylaxis was transmitted to the offspring, as was proven both by exposing them to the dust, to which they reacted without any previous form of sensitization, and by injecting them with an extract made from horse dander, from which they either died in typical anaphylactic shock or developed

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[1] Ratner, B., Jackson, H. C., and Gruehl, H. L., *Am. J. Dis. Child.*, 1927, xxxiv, 23.

[2] Ratner, B., Jackson, H. C., and Gruehl, H. L., *J. Immunol.*, 1927, xiv, 249, 267, 275, 291, 303.

profound anaphylactic symptoms. In 6 of the families, we were unable to produce respiratory anaphylaxis in the mother and in 2 of the families, respiratory anaphylaxis was induced in the mother, but was not transmitted to the offspring.

The establishment of respiratory anaphylaxis has been adequately controlled by innumerable experiments, for in no instance has an animal been utilized who showed the slightest evidence of dyspnea during its sensitization period, and it is only after the incubation period has elapsed that respiratory anaphylaxis is manifested. The new-born animals were adequately controlled by the six negative groups, indicating that even animals as young as one day old show no dyspnea when placed in a cage unless they are sensitive.

That a dry substance entering the respiratory tract may go into solution in the maternal circulation, traverse the placental barrier, and enter the fetal circulation is demonstrated by the above experiments, and may offer another explanation[3] for the transmission of allergy or anaphylaxis from a mother to her baby. This transmission of hypersensitiveness from a mother to her offspring we must regard as strictly congenital.

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Changes in the Peripheral Circulation Accompanying "Tobacco Angina."

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It is now fairly well established that coronary artery disease, occlusion, and consequent myocardial infarction constitute one of the pathological conditions associated with the syndrome, *angina pectoris*. There is, however, great diversity of opinion as to the mechanism of this symptom-complex; the probability is that typical *angina pectoris* is due to a single mechanism. There are several well recognized exciting causes of angina; such as physical effort, emotional excitement, exposure to cold or to fresh air, overeating, and in some patients tobacco smoking. We had observed a very few patients, beyond middle age, predisposed to *angina pectoris,* in whom the attacks could be provoked very promptly by smoking a cigarette. The attacks of pain induced by smoking were relieved by

[3] Ratner, B., *Am. J. Dis. Child.*, 1928, xxxvi, 277.