

EFFECT OF PRENATAL INSECTICIDE EXPOSURE ON RESPIRATORY HEALTH OF NEWBORN

By

Azza Moustafa Foad Hathhout

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Diploma of Obstetric and Gynecology 1998 Ain shams University

A Thesis Submitted in Partial Fulfillment

Of

Requirements for the Master Degree

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Approval Sheet

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تأثير التعرض للمبيدات الحشرية خلال فترة الحمل على صحة الجهاز التنفسي للطفل عند ولادته

رسالة مقدمة من

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INTRODUCTION

Pesticides are biocide agents used to control a wide variety of organism that pose a threat to health or compete for food and other material.

Selective toxicity is the goal of pesticides' use, but because organisms are similar at the cellular and subcellular level, adverse human health effects may occur (*Schenker et al., 1998*).

Pesticides are, by definition, toxic and biocide. They are contaminants of our environment and have been found in air. Pesticides are defined under the federal Insecticide, fungicide and Rodenticide Act (FIFRA) as any substance or mixture of substance intended for preventing, destroying and repelling any pest including insects, rodents, nematodes, fungi, weeds or any other form of life aquatic or animal. Also, pesticides are considered as any substance or mixture of substance intended for use as a plant regulator, defoliant or desiccant (*Amr, 1997*).

Pesticide use is widespread in agriculture. Several studies have shown that pesticides used in agricultural fields can contaminate the domestic environment and thus be an important source of pesticide exposure of populations residing nearby.

Human are exposed to pesticides in a variety of occupational settings, including, structural pest control, public health pest eradication programs, manufacture and formulation industries such as railroads, and trucking, the florist industry and hazardous water treatment as well as the clean up. Many commercial products, such as paints, cotton, and wood products, have fungicides, added to prevent degradation. Herbicides are used heavily in maintain rights of ways (*Schekar et al., 1998*).



Epidemiological studies that have examined the health effects of in utero pesticide exposure from residence near agricultural activities suggest adverse effects, but the results are inconsistent (*Petit et al., 2010*).

Although indications of health effects from pesticides are applicable to the general population, certain subpopulations warrant particular concern and special protections. During critical period of development. Conception to puberty, exposure to pesticides can results in increased risk for health outcomes (*Weselak et al., 2007*). Therefore, attention to women's exposure during pregnancy is especially important. Prenatal exposures to pesticides have been linked with otitis media, respiratory distress, asthma decreased fetal growth and length of gestation, and certain birth defects (*Weselak et al., 2007*).

Our purpose is to investigate the association between prenatal pesticide exposure and neonatal respiratory distress.



AIM OF THE WORK

The aim of the work is to examine the association between prenatal maternal pesticide use and neonatal respiratory distress.

THE RESPIRATORY SYSTEM IN BABIES

What is respiration?

Respiration is the act of breathing:

- Inhaling (inspiration) - taking in oxygen
- Exhaling (expiration) - giving off carbon dioxide

What makes up the respiratory system?

The respiratory system is made up of the organs involved in the interchanges of gases and consists of the:

- Nose
- Pharynx
- Larynx
- Trachea
- Bronchi
- Lungs

(Juan, 2012)

The upper respiratory tract includes the:

- Nose
- Nasal cavity
- Ethmoidal air cells
- Frontal sinuses

- Maxillary sinus
- Larynx
- Trachea

The lower respiratory tract includes the:

- Lungs
- Bronchi
- Alveoli

(Juan, 2012)

What is the function of the lungs?

The lungs take in oxygen, which cells need to live and carry out their normal functions. The lungs also get rid of carbon dioxide, a waste product of the body's cells.

The lungs are a pair of cone-shaped organs made up of spongy, pinkish-gray tissue. They take up most of the space in the chest, or the thorax.

The lungs are enveloped in a membrane called the pleura (*Joanne et al., 2005*).

The lungs are separated from each other by the mediastinum, an area that contains the following:

- Heart and its large vessels
- Trachea (windpipe)
- Esophagus

- Thymus
- Lymph nodes

(Peter et al., 2006)

The right lung has three sections, called lobes. The left lung has two lobes. When you breathe, the air:

- Enters the body through the nose or the mouth.
- Travels down the throat through the larynx (voice box) and trachea (windpipe).
- Goes into the lungs through tubes called main-stem bronchi
 - o One main-stem bronchus leads to the right lung and one to the left lung
 - o In the lungs, the main-stem bronchi divide into smaller bronchi
 - o And then into even smaller tubes called bronchioles
 - o Bronchioles end in tiny air sacs called alveoli

(Jason et al., 2006)

Breathing in babies:

An important part of lung development in babies is the production of surfactant. This is a substance made by the cells in the small airways and consists of phospholipids and protein. It begins to be produced in the fetus at about 24 to 28 weeks of pregnancy. Surfactant is found in amniotic fluid between 28 and 32 weeks. By about 35 weeks gestation, most babies have developed adequate amounts of surfactant. Surfactant is normally released into the lung tissues where it helps lower surface tension in the airways. This helps keep the lung alveoli (air sacs) open. Premature babies may not have enough surfactant in their lungs and may have difficulty breathing (*Lynne et al., 2009*).

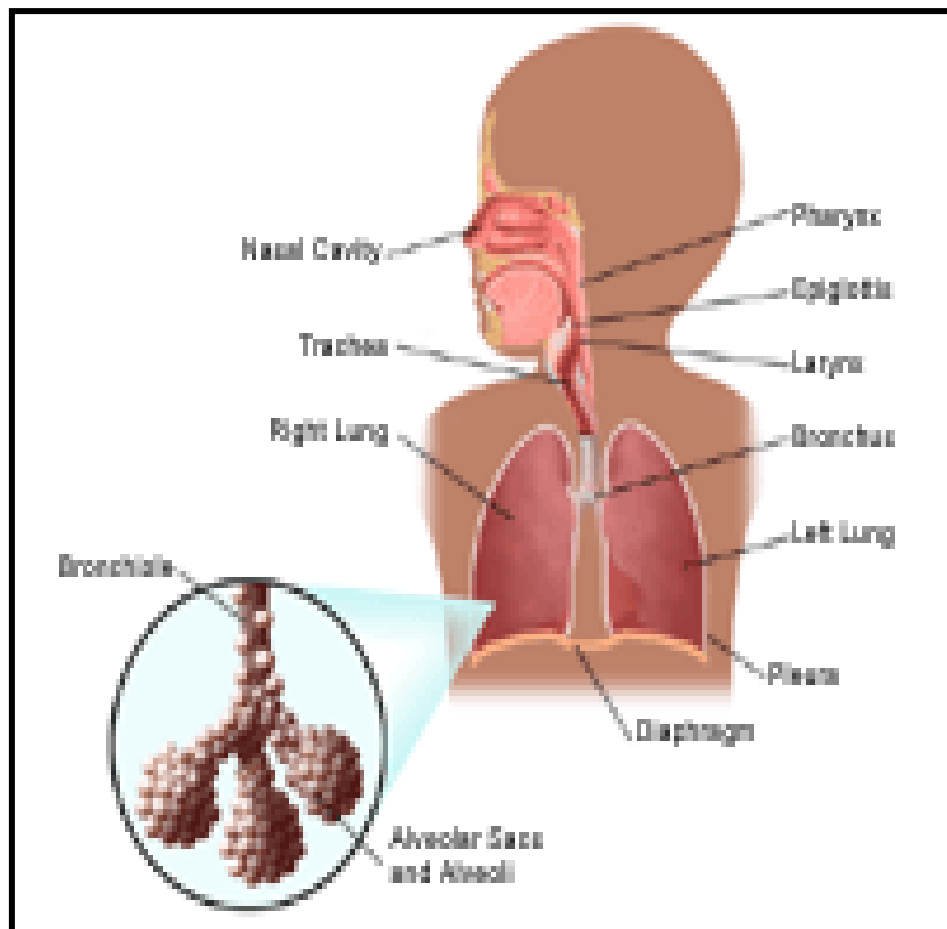


Fig. (1):The respiratory system in babies (*Lynne et al., 2009*).