Role of Family Physician in Guiding Drug Use during Pregnancy

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To

The Memory Of

My Father

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ABSTRACT

Health care providers face a dilemma when a pregnant woman develops a condition that usually is treated with a pharmacologic agent. It is well known that pregnancy can induce changes in the plasma concentrations of some drugs. Understanding of these pharmacokinetic changes, basic teratology associated with drugs as well as the pregnancy drug risk categorization can assist professionals in recognizing which pharmaceuticals should be used or avoided in treating a pregnant woman. The role of family physician in guiding drug use during preconception as well as antenatal care was elucidated. Some ethical issues regarding maternal-fetal medicine were discussed, and the impact of alcohol and illicit drugs on the mother and the fetus was reviewed.

Keywords:

Pregnancy - Pharmacokinetics – Placenta – Fetus – Drug – Family Medicine – Alcohol - Teratology

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LIST OF ABBREVIATIONS

ABC	ATP Binding Cassette
ACAAI	The American College of Allergy, Asthma, and Immunology
ACE	Angiotensin Converting Enzyme
ACOG	The American College of Obstetricians and Gynecologists
ADA	American Diabetes Association
AEDs	AntiEpileptic Drugs
AIDS	Aquired Immunodeficiency Syndrome
ASHP	American Society of Health-System Pharmacists
ATP	Adenosine TriPhosphate
BCRP	Breast Cancer Resistance Protein
C.G.D.U.P.	the Collaborative Group on Drug Use in Pregnancy
CAs	Congenital Anomalies
CDC	Center for Disease Control and Prevention
Cmax	Peak plasma concentration
CYP	Cytochrome P
Da	Dalton
DVT	Deep Venous Thrombosis
ECF	ExtraCellular Fluids
FDA	Food and Drug Administration (USA)
G6PD	Glucose-6-Phosphate Dehydrogenase
GDM	Gestational Diabetes Mellitus
GFR	Glomerular Filtration Rate
GPs	General Practitioners
GST	Glutathione S-Transferase
HG	Hyperemesis Gravidarum
HIV	Human Immunodeficiency Virus
IBD	Inflammatory Bowel Disease

LT4	Levothyroxine
MDR	MultiDrug Resistence gene
MRP	Multidrug Resistance-associated Protein
MW	Molecular Weight
NADP	Nicotinamide-Adenine Dinucleotide Phosphate
NAS	Neonatal Abstinence Syndrome
NTD	Neural Tube Defect
OC	Oral Contraceptives
OTC	Over-The-Counter
OTIS	The Organization of Teratology Information Specialists
PCOS	Polycystic Ovarian Syndrome
PEPT	Peptide Transporters
P-gP	P-glycoprotein
PK	Pharmacokinetics
RCTs	Randomized Controlled Trials
RDS	Respiratory Distress Syndrome
TERIS	Teratogen Information System
TIS	Teratogen Information Service
Tmax	Time of peak plasma concentration
TSH	Thyroid Stimulating Hormone
UGT	uridine diphosphate glucuronosyltransferase
USPSTF	US Preventive Services Task Force
UTI	Urinary Tract Infection

INTRODUCTION

Since the thalidomide disaster over 40 years ago, we have known that medication use in early pregnancy poses a potential risk to the fetus. Yet, drugs typically enter the marketplace and are used in pregnancy without our being able to reliably predict whether they carry teratogenic risk. Premarketing pharmacologic, animal, and clinical studies often fail to accurately identify drugs of concern. In the postmarketing setting, case series and small cohorts of exposed pregnant women, like the ongoing pregnancy registries for newly marketed drugs, can only detect major human teratogens such as thalidomide or isotretinoin. While major teratogens fortunately appear to be few, less dramatic teratogens may be more numerous and more widely used and could therefore lead to a greater excess number of birth defects than major teratogens (Hernandez-Diaz 2006).

Pharmacotherapy during pregnancy is often necessary mainly because of the need to treat the mother either for chronic diseases (e.g. epilepsy, diabetes, asthma, or hypertension) or for acute illnesses (e.g. infections, seizures and gastrointestinal disorders) or even for severe complications such as tumors. On the other hand, there is an increasing demand to treat the fetus via maternal drug administration, e.g. for fetal tachycardia or to prevent materno-fetal transmission of HIV infection (Ceckova-Novotna et al. 2006).

Pregnant women are worried about medication use during pregnancy and need good advice. Women usually overestimate the teratogenic risk of medication exposures during pregnancy and therefore, may avoid prescriptions or exhibit non-compliance with recommended therapy. A study noted that women exposed to non-teratogenic medications in early pregnancy estimated the risk of a major fetal abnormality at about 25%. Pregnant women may avoid necessary medications out of fear or poor advice (Gibson