malformations related to sibutramine use in early pregnancy. Our aim is to report outcomes of 10 additional cases.

Methods: We report a series of observations from two counseling centers for pregnant women and their doctors: a center for drug safety in pregnancy and lactation ("Babyrisk") in St Petersburg (West of Russia) and counseling center of clinical pharmacology in a neonatal pediatric hospital in Vladivostok (East of Russia).

Results: Ten women approached the above-mentioned centers during 2011 and 2012. All were taking sibutramine for weight loss without official prescription and discovered unplanned pregnancy while on sibutramine. All of them stopped sibutramine in the first trimester: four women on gestational week 2; five on week 4 to 5; one woman on week 6 to 7. Median age of the women was 29 (ranging 23–35) years, sibutramine daily dose was 15 mg in 6 and 10 mg in four cases. All cases were followed-up via telephone interview and checked with city registries of inborn anomalies. Nine women gave birth to normal healthy babies. No cardiovascular complications were reported. In one case, pregnancy was terminated on week 12 due to fetal malformations: cystic lymphangioma and malformation of upper limbs. Genetic evaluation resulted in detection of chromosome 13 and 18 trisomy.

Conclusion: Our report adds to a total number of cases demonstrating general safety of sibutramine use in early pregnancy, although exposures of sibutramine and its metabolites presumably exceeded "all-or-none" period in only half of the cases.

22. Beta-2 Agonists and Montelukast in Pregnant Asthmatic Patients

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Background: Asthma is one of the most common medical conditions encountered during pregnancy, occurring in 3% to 8% of pregnant women. Uncontrolled asthma is associated with increased risk of preeclampsia, preterm birth, perinatal death, or maternal and fetal complications such as low birth weight. National Asthma Education and Prevention Program (NAEPP) recommends using short-acting $beta_2$ agonist albuterol (salbutamol) during pregnancy. Although no increased risk for congenital anomalies is reported in the studies related to salmeterol and formoterol, congenital anomalies (cleft palate, limb defects) have rarely been reported following maternal salbutamol use. Montelukast is classified as U.S. Food and Drug Administration Category B. However, the manufacturer states that congenital limb defects have been rarely reported in the offspring(s) of women exposed to montelukast during pregnancy without established causality. Due to the lack of human safety information, montelukast should be used in pregnancies only if the potential benefit outweighs the potential risk to the fetus. In this study, the pregnancy outcomes of the women exposed to beta-2 agonists and/or montelukast are evaluated.

Methods: The pregnant women who have applied to "Karadeniz Technical University Teratogen Information Service" between 1999 and 2013, were included in this case series of maternal beta-2 agonists and/or montelukast exposure. During the postpartum period, development of babies was followed up for a year.

Results: The results of 37 pregnant women exposed to $beta_2$ agonists and/or montelukast are evaluated. Seven of 37 women used both beta-2 agonists and montelukast. Sixteen of them used only beta-2 agonists, and 14 of them used montelukast. In 33 pregnancies, multiple drug exposure was also observed. Five of the pregnancies were ended with spontaneous abortions; four with elective terminations. One of the pregnancies was exposed to both salbutamol and ergotamine, ended with preterm delivery and death. Congenital hypothyroidism is observed in the child of woman exposed to salbutamol in preconceptional period. The rest of deliveries were on term, except one preterm and premature baby, and all of them are healthy still.

Conclusion: In this case series, the presence of montelukast exposure both in the observed congenital hypothyroidism case and in three of five spontaneous abortion cases is remarkable.

23. Pregnancy Outcome following Maternal Exposure to Pregabalin: Preliminary Results of a Collaborative ENTIS and Motherisk Study

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Background: Animal studies have shown reproductive toxicity of pregabalin at doses higher than those used in humans. Currently no published data are available on pregnancy outcomes in patients exposed to pregabalin. In this study we investigate the risk for major birth defects and other pregnancy outcomes with exposure to pregabalin during pregnancy.

Methods: This is a multicenter ($n = 9$), observational prospective cohort study comparing pregnancy outcomes after exposure to pregabalin with a matched control group (no exposure to medications known to be teratogenic or to any antiepileptic drug). Data were collected by members of the European Network of Teratology Information Services (ENTIS) and Motherisk during individual risk counseling between 2004 and 2013.

Results: We collected data from 173 exposed pregnancies and 692 controls. Altogether, major birth defects were reported more frequently in pregnancies exposed to pregabalin than in the control group (8.5% versus 2.8%; unadjusted odds ratio[OR], 3.2; 95% confidence interval [CI], 1.3–7.5, $p = 0.002$). After exclusion of chromosomal syndromes, a non significant trend towards a higher rate of birth defects in the pregabalin group persisted (5.4% versus 2.0%; OR, 2.8; 95% CI, 0.9–7.9, $p = 0.06$). Further analysis will focus on clarification of some anomalies and possible confounding factors. The rate of live births was noticeably lower in the pregabalin group (71.1% vs. 85.4%; $p < 0.001$), primarily due to a higher rate of both elective (10.4% vs. 4.8%; $p = 0.01$) and medical (5.2% vs. 1.7%; $p = 0.02$) pregnancy terminations. In addition, the crude rate of spontaneous abortion (14.4% vs. 8.0%, $p = 0.03$) was higher in the pregabalin group. Preterm birth rates (<37 weeks) (8.9% vs. 8.0%; $p = 0.72$), gestational age at birth (median 40 weeks; interquartile range (IQR), 38–40 vs. median 40; IQR, 38–41; $p = 0.58$), and birth weight (median, 3290 g; IQR, 3000–3640 vs. 3350 g; IQR, 3020–3644; $p = 0.55$) did not differ between the groups.

Conclusion: These preliminary results raise a possible signal for an increased crude rate of birth defects and spontaneous abortions after exposure to pregabalin during pregnancy. Further analyses are still needed to exclude biases or confounders. These results call for further confirmation through independent studies.

24. Pregnancy Outcome after Dimethyl Fumarate Treatment during Early Pregnancy. A Prospective Case Series

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Background: Dimethyl fumarate containing drugs have been used for treating psoriasis in Germany for many years. However, there are no published data on its use during pregnancy. Only recently dimethyl fumarate has been licensed for multiple sclerosis (MS). From clinical MS studies, pregnancy outcomes of 25 dimethyl fumarate recipients are available resulting in 15 healthy live births, 3 spontaneous abortions, and 7 elective terminations (1). The aim of this case series was to evaluate the risk of birth defects, spontaneous abortion, and elective termination of pregnancy after first trimester exposure to dimethyl fumarate.

Methods: Pregnancy outcomes of women on dimethyl fumarate were evaluated in a prospective observational case series. The sample consists of pregnancies identified by our institute which was spontaneously contacted by health care professionals and pregnant women for drug risk assessment during pregnancy.

Results: Follow-up of pregnancy outcome after dimethyl fumarate exposure was initiated in 43 cases and completed in 34. Five cases were lost to follow-up and four pregnancies are still ongoing. Thirty-two women with completed follow-up were treated for psoriasis and 2 for other skin disorders. Median maternal age was 31 years, and body mass index was 23.9. The majority (90.6%) did not drink any alcohol during pregnancy, and 62.5% were non-smokers. Less than the half (47%) had at least one previous parity. Dosage of dimethyl fumarate varied between 120 mg/d and 720 mg/d. Except for one pregnancy with pre-conception use only, treatment was started prior to conception ($n = 30$) or shortly after conception ($n = 3$) and was usually stopped after recognition of pregnancy, at a median gestational age of 6 weeks after the last menstrual period. There were two birth defects among 27 live-born infants, of which one was relatively major (horseshoe kidney). Thirteen girls and 14 boys with a median birth weight of 3410 g were delivered at a median gestational age of 39 weeks. Four early and one late spontaneous abortions occurred. Two pregnancies were electively terminated for social reasons.

Conclusion: Our limited data do not provide evidence for an increased risk of adverse pregnancy outcome after dimethyl fumarate containing drugs in early pregnancy.

25. Pramipexole Use in Pregnancy: Three Cases in the Netherlands

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Background: Pramipexole is used for the treatment of restless legs and Parkinson's disease. When treatment in