P101-004
Retrospective analysis of correlation between blood antiepileptic drug levels and gender

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In the present study, it was aimed to determine the effects of gender factors on plasma concentrations of antiepileptic drugs routinely used in practice. For this purpose, data of 1540 patients which the antiepileptic drug levels had been analysed in Eskisehir Osmangazi University Medical Faculty Pharmacology laboratory between 2009 and 2010, were investigated. The distribution of drugs among the cases was; 450 phenytoin, 130 phenobarbital, 314 carbamazepine and 981 valproic acid. According to results, phenobarbital plasma concentration was higher in men than women; carbamazepine, valproic acid and phenytoin plasma concentrations were higher in women compared to men. Correlation of valproic acid blood level with gender was statistically significant. The ratio of the number of data in therapeutic range for the drug levels of phenytoin, phenobarbital, carbamazepine and valproic acid was 17.11%, 38.24%, 50.32%, 51.58%, respectively. The mean of the blood levels was out of the therapeutic range except valproic acid. In multi-drug treatment, 88.89% of the patients were out of the therapeutic range, which was statistically significant. The drug which was the most frequently seen out of the therapeutic range was phenytoin. Plasma concentration differences between genders for valproic acid, phenobarbital, carbamazepine, and phenytoin, could be due to variations in enzyme activity responsible for the biotransformation. On the other hand, valproic acid concentrations were found to be statistically significantly high in women compared to men. This significant difference was believed to arise from major status of glucuronidation pathway in valproic acid metabolism and more active nature of glucuronidation pathway in men compared to women. Multi-drug treatment might cause the levels out of therapeutic range because of autoinduction. If the other drugs could reach the therapeutic range, there would be a possible significant difference between genders.

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Animals as sentinels of human environmental risks: Lead exposure biomonitoring on pets and children

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Environmental chemical pollutants can be absorbed and cause adverse health effects on most living organisms. In order to assess their toxicity risks, the biomarkers are widely used in biological monitoring of susceptible human populations and are also used to sensitive living species in the ecosystems.

In human medicine, the recognition that animals can be used as "sentinels" of environmental health hazards is not yet widely accepted and generally the data from these animals are not considered for medical intervention.

Pets usually suffer from diseases attributable to environmental pollution and may even be more susceptible to poisoning, presenting serious health problems before they occur in the human population. For example, dogs can provide key diagnostic elements to consider that children, living with them, may be contaminated by lead because these pet species are susceptible to develop early severe intoxication symptoms to lead exposure.

Several examples showed that animals could be toxic risks sentinels to humans. We present our results of a comparative study of blood lead levels (BLLs) in populations of dogs and children in Uruguay to highlight the benefits of sharing data and research on human and animal environmental health impacts.

BLLs were determined for two dog population: stray (97) and pet ones (151) to evaluate the significance of variables such as age, sex, size, area of residence, and possible sources of lead and lead-related symptoms. Associations between BLL and single variables were then evaluated using statistical analysis. Simultaneously but independently performed, a similar BLL surveillance screening study on Uruguayan children (168) was underway with comparable parameters. BLL in dogs with those in children were compared and a final complementary study on 12 families with dogs and children living together was performed, to demonstrate the importance of biological monitoring in dogs to prevent childhood lead poisoning.

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P101-006
Relationship between methylmercury and DHA in pregnant women and fetuses: The risks and benefits of fish consumption

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Methylmercury (MeHg) is one of the most hazardous substances to fetal brain development. Most exposure to MeHg is through maternal fish consumption. On the other hand, docosahexaenoic acid (DHA, 22:6n-3), which is important for the fetal brain and its growth, is also derived from maternal fish consumption. In this study, venous blood samples were collected from 50 pairs of mothers at early gestation, and mothers and fetuses (cord blood) at parturition. Mercury (Hg) in whole blood and fatty acids in plasma were measured. Significant positive correlations with Hg ($r = 0.78$) and DHA ($r = 0.67$) were observed between mother and fetuses, indicating that both substances in fetuses reflect maternal exposures. The average Hg concentrations in fetal blood was about 1.9 times higher than that in maternal blood, suggesting active MeHg transfer through the placenta. Significant positive correlations of Hg and DHA were observed in mothers both at early gestation ($r = 0.29$) and at parturition ($r = 0.36$). A significant positive correlation between Hg and DHA was also observed in fetuses ($r = 0.36$). These results suggest that Hg and DHA were derived from fish consumption, being selectively transferred from mothers to fetuses. If pregnant women consume more fish, both Hg and DHA concentrations simultaneously become higher in fetal blood. Maternal DHA at parturition showed a higher correlation coefficient, with maternal hair Hg 5–6 cm from the scalp ($r = 0.43$) being higher than maternal hair Hg 0–1 cm from the scalp ($r = 0.33$). Fetal DHA showed a higher correlation coefficient with maternal hair Hg 4–5 cm from the scalp ($r = 0.38$) being hair than maternal hair Hg 0–1 cm from the scalp ($r = 0.34$). These results indicate that maternal and fetal DHA levels at parturition are established by the fish intake, not only during the late gestation period but also during the mid-gestation period.

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