Case-Control Study on Congenital Malformation Risk in the Petrochemical Area of Gela (Sicily-Italy)

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Objective:

A study on congenital malformations (CMs) prevalence in newborns residing in the Gela municipality over 1991 to 2002 showed statistically significant excesses of total CMs, spina bifida, microcephaly, heart defects, hypospadias, if compared with the Italian EUROCAT registries (Bianchi, 2006). Many environmental and occupational risk factors reported as potentially associated with CMs have been documented in Gela and other similar industrial areas. Among toxic substances documented in the Gela site several are known as teratogenic and mutagenic (heavy metals, chloro- and organophosphates solvents, PCBs, aromatic polycyclic hydrocarbons), some of which are documented or suspected to be endocrine disruptors. A case-control study was carried out to evaluate whether among malformed subjects there was risk excess due to environmental, occupational, or lifestyle exposures, particularly eating habits.

Material and Methods:

Among 91 cases with malformations found in excess, 77 were selected by specialty medical visits; 91 matched controls were included. The questionnaire included information on pregnancy, parents' work (particularly in the industrial plants) before and during pregnancy, parents' eating habits, purchase place (shop, street vendor, growing own food plants/fishing). Statistical analyses were performed for all CMs and for hypospadias only.

Results:

Significant risk associations resulted for consumers of fish, fruit, and vegetables if purchased at street vendors or for fishing and growing own food plants (OR from 6.0 to 51.3).

Conclusions:

Results on food consumption suggest a possible reproductive risk for fish, fruit, or vegetables purchased at street vendors or for fishing or growing own food plants potentially locally contaminated either by men (eg, pesticides) or by substances released in the environment. Notwithstanding the impossibility of making a distinction between effects of the 2 potential
contamination sources and the possible bias and misclassification problems typical of retrospective studies, results obtained still represent major concern on food chain and on possible effects on reproductive health.

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