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Commentary Open Access

Occupational Risk Assessment and Genetic testing in the Workplace: Commentary on Lurati Ann R. (2014)

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Commentary

The theme of the recent article of Lurati AR [1] refers to occupational risk assessment and genetic testing in the workplace. It is an excellent approach however I would like to note following counterpoints for discussion.

The purpose of risk assessment is to enable the employer to take necessary measures in order to ensure the safety and health of workers in every aspect related to work. According European Union's guidelines [2] and practice, these measures include the prevention of occupational risks, the provision of information and training to employers. Risk assessment focuses on the risks related to every workplace evaluating the hazards and estimating the likelihood that the potential for harm under the working conditions and the possible extent of the harm.

Risk assessment is a dynamic, systematic approach taking into account:

- magnitude and frequency of the exposure,
- data related to occupational accidents or any adverse effect caused or facilitated by the working conditions. These data may be originated by the same working environment or extrapolated by similar working conditions,
- opinion of experts,
- subjective approach of workers [3,4].

The health assessment of the employees is not the main goal of the risk assessment. In terms of pre-employment examination, it determines whether an individual is fit to perform his or her job without risk to himself or others. As periodic screening, is the main tool for the secondary prevention of occupational diseases. The detection of asymptomatic or preliminary adverse effects may lead to individual protection and prevention of occupational diseases, as well as to the adoption of collective protection measures towards the improvement of the workplace hygiene. By this way, it contributes to the risk assessment providing information on the impact of the workplace to the employees. It is a complementary tool for the revision of the risk assessment and for additional protective measures.

Health assessment contributes also to the screening of employees with vulnerability to physical or chemical factors of the working environment. People with functional impairments may be moved from incompatible exposure to a safer workplace. The management of each case is unique, based on the kind of the impairment and the kind of the exposure. Health history is very important for the individual health assessment. Suspected impairment either hereditary or acquired has to be confirmed with appropriate tests. A test to be valid must be accurate with high sensitivity and specificity. Eventual false positive may subvert the medical screening as a health policy tool. False negative may set severe ethical and legal implications. Unfortunately evidence based for laboratory screening is poor. Even the application of genetic enzymatic defects like cholinesterase activity or G6PD deficiency is controversial.

Genetic tests promise to detect genetic variations which hide different tolerance or susceptibility towards external factors like environmental exposure. They also could detect genetic damage which probably predispose to a cancer development. In both applications, genetic tests lack in specificity and sensitivity. The estimation of relative risk of a disease incidence among people with genetic variation is very difficult, since external determinants have an important role. The probability of a genetic alteration to overcome cell self-protective media and to develop a cancer is more or less unknown. The detection of genetic variations predisposing to functional impairment or to susceptibility to occupational exposure is unlikely to be applied in the health and safety policies within the very next years. The meaning of genetic damages as potential for cancer is as well doubtful. The lack of adequate evidence based criteria, high cost and ethical issues set strong barriers. Even if a genetic test would be sufficiently accurate to detect a genetic predisposition it would be not adequate neither to exclude positive individuals from the workplace nor to modify evidence based regular health surveillance for negative individuals. It would be therefore, whenever applicable, with great attention and skepticism, taking into consideration that current technology and relative knowledge is less mature than desirable.

Health assessment of employees should focus on the ethical and evidence-base aspects [5-8]. Although health data may improve workplace risk assessment, health assessment's aim is to maintain employees in an occupational environment adapted to their physiological and psychological capacities [9]. The determination whether an individual is fit to perform a job without risk to himself or other, should not exclude impaired workers but should adapt workplace to their abilities and promote risk management. Selection of employees according to health data is not allowed.

Those are my personal thoughts which are for discussion and for further study with each other.

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