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论著

上海“6.25”辐射事故受照者14年染色体畸变随访研究

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摘要 背景与目的： 1990年上海“6.25”60Co源辐射事故中2例重度、3例中度骨髓型急性放射病患者被救治成功。为了阐明放射病的远后效应，对该5名受照者连续进行照后14年的染色体畸变随访观察，为辐射远后效应评价积累资料。 材料与方法： 常规染色体畸变分析、G-显带自动核型分析以及用全染色体涂染探针进行FISH分析，检测非稳定性畸变(Cu)和稳定性畸变(Cs)，并将历年检测结果进行比较。 结果： 照后3.5年染色体Cu畸变降至初始水平的20％左右，照后14年已基本丢失贻尽。残留的畸变以易位等Cs畸变为主。Cs与复杂畸变的出现频率均与受照剂量相关，照后6～14年基本保持不变。G-显带自动核型分析与FISH方法检出的总畸变率大体一致。各条染色体的断裂几率呈随机分布。染色体畸变的恢复速度及远后效应的严重程度不仅与受照剂量有关，而且与机体的健康状况密切相关。 结论： Cs畸变是评价辐射远后效应的理想指标。对事故受照者进行长期随访观察具有十分重要的意义。

关键词 染色体畸变； G-显带核型分析； 荧光原位杂交； 辐射远后效应

14 Years Follow-up Studies of Chromosome Aberrations in Victims Exposed to 60Co-γ Radiation in Shanghai “6.25” Accident

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Abstract BACKGROUND AND AIM: In 1990, 2 severe and 3 moderate degree acute radiation syndrome (ARS) victims in Shanghai “6.25” 60Co accident were cured. To investigate late effects of ARS, 14 years continuous follow-up study of chromosomal aberrations in these 5 victims was performed to accumulate valuable data on late effect of radiation. MATERIALS AND METHODS: Conventional chromosome aberration, G-banding automatic karyotype analysis and whole chromosome probe painting FISH technique were used simultaneously to examine unstable and stable chromosome aberrations and compare the results over 14 years. RESULTS: Unstable aberrations declined to approximately 20％ of initial level 3.5 years after exposure and was totally lost after 14 years. Stable aberrations such as reciprocal translocations were found predominantly. The results of G-banding karyotype analysis and FISH were very similar. The frequencies of Cs and complicated aberrations showed a dose-response relationship and remained at a relatively stable level 6－14 years after exposure. The break frequencies of each chromosome distributed randomly. The recovery speed of chromosome aberrations and degree of late effect related not only to exposure dose but also to the victims′ health condition. CONCLUSION: Stable chromosome aberrations were fairly ideal in the assessment of radiation late effects. It is important to make long-term follow-up study for the victims exposed to accidental irradiation.

Keywords chromosomal aberrations G-banded karyotype analysis FISH radiation late effects

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