

Results of chromosome aberrations after Computed Tomography (CT) in children

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The use of CT scans has increased rapidly during the last years in adults and children as well. CT involves larger radiation doses than the more common conventional x - ray imaging procedures. To examine the biological effect in the peripheral blood of the paediatric patients chromosome analysis was carried out in 10 children for whom the medical justifications for CT examinations were accidental injuries and not diseases as investigated in earlier studies. Blood samples were taken before and after CT scans. Chromosome analysis was carried out in lymphocytes by fluorescence plus Giemsa (FPG) staining exclusively in metaphases of the first cell cycle in vitro. The mean blood dose of the 10 children was about 12.9 mGy which was determined by a newly developed dose estimation. Based on more than 20,000 analysed cells it was found that after CT examination the mean frequencies of dicentrics and excess acentric fragments in lymphocytes were significantly increased. By subdividing the children into two age groups, those with an age from 0.4 years to 9 years and from 10 years to 15 years, it became obvious that the observed increase in chromosome aberrations was mainly contributed by the younger age group. In this group the frequency of dicentrics was significantly increased whereas in the older group the observed increase was not significant. Further investigations will be necessary to confirm these results.