

CHAPTER 34

MEDICAL SCIENCES RADIOLOGY

Doctoral Theses

01. SIROHI (Shikha)
Study the DNA Damage and Repair Mechanism in the Patients Undergoing Multidetector Computed Tomography (MDCT).
Supervisors: Prof. Anupama Tandon and Prof. B.D. Banerjee
Th 26929

Abstract

The decrease in Head DNA and increase in tail DNA, tail length and, olive tail moment were seen after MDCT scan which remained altered even up to 24 hours (on diagnostic radiation 4-16 mSv). This indicates that there is significant increase in DNA damage after CT examination which persisted at 24 hours also. Significant increase in ROS level observed post CT, reflecting that there is rapid increase in free radicals production in the mitochondria, some reduction in ROS level occurred at 24 hours but the level is still higher than control value suggesting residual damage at 24 hours. The mRNA level of H2AX significantly decreased immediately post CT examination, which is also an indicator of DNA damage. In the 24 hours sample, H2AX level increased suggesting that repair mechanism has been initiated. Subsequent to DNA damage there was upregulation of ATM and p53 genes which were both significantly in post CT samples. At 24 hours p53 mRNA further increased indicating continuing repair mechanism. Positive correlation between tail DNA and ROS, ATM and P53 was found and negative correlation between Head DNA and H2AX was found.

Contents

1.Introduction 2. Aims and objective 3. Review of literature 4. Material and methods 5. Results 6. Discussion 7. Conclusion 8. References. 9. Annexures