

SURGICAL TREATMENT OF PLUTONIUM-CONTAMINATED WOUNDS

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ABSTRACT

This Paper reviewed the surgical treatment of plutonium-contaminated wounds through 7 cases from 1972 to 1985. All the cases were men. The causes of contamination were mainly carelessness in work. The classification of wound was laceration (2 cases), burn (2 cases) and puncture (3 cases). Original activity of plutonium deposited in wounds were estimated to be from 40.7Bq to 1.739×10^4 kBq. After first aids they were performed by early surgical wound excision and DTPA administration.

Only two cases of them, due to the more plutonium still remaining in wound, were admitted to our hospital. We repeatedly monitored the amount of plutonium in wounds and local lymphonodes and also determined the range of contamination. The level of activity was 0.3145kBq, 7.03kBq and 0.555kBq, 1.0915kBq respectively. Under the block anesthesia, according to radio-active operation regulation, wounds and local lymphonodes were excised and to one of them DTPA was injected systemically and locally. Then it was satisfactory that the level of plutonium remained in wounds decreased from 111Bq to 18.5Bq. The committed dose equivalent was 0.885Sv.

The fact as above shows that it is important to pay more attention to plutonium deposited in regional lymphonodes for PuO_2 -contaminated wounds. Lymphonodectomy were performed for two cases with plutonium in local lymphonodes. We have followed them up to 2-14 years and no unsatisfactoriness was found. It also demonstrated that DTPA local injection not only was effectively to decrease the level of plutonium in wound but also might prevent the increase of the body burden of plutonium. So, we suggested that it should elect the method of anesthesia and abide by regulation in operation and the locally supplying chelating agents was suitable for the cases whose residual amount of plutonium in wound up to a certain level and who was not intended to perform any other surgical procedure.