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코발트-60의 照射野 變形 및 半陰影 遮蔽효과에 따른 線量分布에 관한 硏究

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Abstract

A Study on the Dose Distribution of Various Field and Penumbra Shield in the Telecobalt-60

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This study was performed on the dose distribution of various field size and the effect of penumbra shield in the telecobalt unit.

The results obtained are as follows.

1. Errors of the light and *r*-ray field size was below the regulation as 0.52 percentage.
2. The coefficient of field area was increased with the larger field area, and this coefficient was showed the more difference in larger SSD.
3. The rectangular field areas, which were described by level of the same percentage depth does, were decreased with the more elongation factor.
   At the same elongation factor, the compensating factor was decreased with the larger field size.
4. The lead block or extension collimator was able to shield *r*-ray exposure of outside field size from 50 to 80 percentage.
5. On the matching adjacent fields, while the gap between beam edges are contacted, that overlapped beam edges indicated up to 140 percentage, and while the gap was 1 cm, it could be reduced to 90 percentage. The lead-libocking on the overlapped area was more effective to lower dose, as 80 percentage in this case.
6. Percentage depth dose of various trimming field sizes were increased linearlly according to area 1 perimeter size, but the center split field size did not maintain linearlly.

코발트-60 遠隔治療裝置에 있어 半陰影에 의한 照射野外의 放射線 피폭과 그 除去效果 및 變形, 照射野에 따른 線量分布 變化에 관한 實驗을 行한 結果를 要約하면 다음과 같다.

1. 光照射野와 γ線 照射野와의 誤差는 0.52% 로 規定値 이하였다.

2. 照射期가 클수록 照射野 係數는 커지며, SSD가 클수록 照射野 係數의 差는 커졌다.

3. elongation factor 가 클수록 深部線量 百分率이 같아지는 正四角形의 面積은 적어지며, 같은 elongation factor 라면 照射野가 커졌을 때 補定係數는 적어졌다.

4. 照射野外 피폭은 연벽돌 차폐나 延長 코리메터를 사용하므로 最高 80%에서 最低 50%까지 除去할 수 있었다.

5. 照射野끼리의 境界面에 間隔이 없을 때, 最高140%가 間隔을 1cm로 하므로서 90%로 떨어졌으며, 照射野 接合面으로 연벽돌로 차폐했을 때 重複의 幅은 約 80%로 減少하였다.

6. 照射野 整形에 따른 深部線量 百分率은 A/P의 크기에 따라 線型 關係로 커졌으나 中央 차폐시는 달라졌다.

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