

Table 1 : Radiographic Factors & Dosage For Conventional Radiograph Of Lumbar Spine Lateral

| S.No. | Name | Exam | KV | MA | Distance in cm | Thickness in cm | Reading in microSv | Net reading | Dose in mSv |
|-------|---------|------------------------|----|-----|----------------|-----------------|--------------------|-------------|-------------|
| 1 | Control | Conevntional L.S.Spine | | | | | 457 | | |
| 2 | Test 1 | L.Spine Lateral | 76 | 100 | 100 | 31 | 135246 | 134.996 | 13.4996 |
| 3. | Test 2 | L.Spine Lateral | 84 | 150 | 100 | 35 | 369571 | 369.321 | 36.9231 |
| 4 | Test 3 | L.Spine Lateral | 76 | 100 | 100 | 31 | 152785 | 152.535 | 15.2535 |
| 5. | Test 4 | L.Spine Lateral | 78 | 125 | 100 | 31.5 | 199824 | 199.574 | 19.9574 |
| 6. | Test 5 | L.Spine Lateral | 76 | 125 | 100 | 30 | 203755 | 203.505 | 20.3505 |
| 7 | Test 6 | L.Spine Lateral | 78 | 125 | 100 | 30.5 | 216163 | 215.913 | 21.5913 |
| 8 | Test 7 | L.Spine Lateral | 76 | 30 | 100 | 24.5 | 34858 | 34.608 | 3.4608 |

| | |
|--------------|-------|
| Mean | 19.15 |
| ± S.D | 11.05 |

Table 2: Radiographic Factors & Dosage For Digital Radiograph Of Lumbar Spine Lateral

| S.No. | Name | Exam | KV | MA | Distance in cm | Thickness in cm | Reading in microSv | Net reading | Dose in mSv |
|-------|---------|-------------------|----|-----|----------------|-----------------|--------------------|-------------|-------------|
| 1 | Control | Digital L.S.Spine | | | | | 457 | | |
| 2 | Test 1 | L.Spine Lateral | 85 | 80 | 100 | 28 | 76012 | 75.762 | 7.5762 |
| 3. | Test 2 | L.Spine Lateral | 81 | 64 | 100 | 22 | 51219 | 51.041 | 5.1041 |
| 4 | Test 3 | L.Spine Lateral | 90 | 100 | 100 | 34 | 135799 | 135.549 | 13.5549 |
| 5. | Test 4 | L.Spine Lateral | 90 | 100 | 100 | 32 | 133882 | 133.632 | 13.3632 |
| 6. | Test 5 | L.Spine Lateral | 90 | 125 | 100 | 36 | 223255 | 223.005 | 22.3005 |
| 7 | Test 6 | L.Spine Lateral | 90 | 100 | 100 | 30 | 106377 | 106.127 | 10.6127 |
| 8 | Test 7 | L.Spine Lateral | 80 | 70 | 100 | 26 | 45773 | 45.523 | 4.5523 |

| | |
|--------------|-------|
| Mean | 11.01 |
| ± S.D | 60.16 |

Vienna 1996. For Lumbar Spine lateral-Non digital unit procedure the ESD value stated to be around 30 mGy which is not very much different from what is estimated in the present study viz 19 mSv⁶ calculated with Standard Deviation ±11.05 (Table 1).

DISCUSSION

The entrance skin dose experimentally obtained as well as the concerned effective dose as per published data in a given X-ray procedure have been projected here. Also the ESD values in conventional and digital X-ray units were compared in lumbar spine lateral procedure in this study. There was reduction of ESD value in digital as good as 42%. The reason for the reduction could be due to various factors including the higher efficiency in signal conversion in digital technology. The aspects like quality of image and lesser patients' dose perhaps demand more work to be done during procedure followed in X-ray diagnostic technology which is a very vast area of research.

CONCLUSION

1. The mean ESD values for conventional X-ray Lumbar Spine lateral is 19.15 mSv and for digital X-ray study is 11.01 mSv and there was a reduction of 42% in Digital X-ray unit procedure.

2. The individual variations would be present which are stated to be machine dependent and also patient built and factors like ESD mAs etc.
3. The mean ESD value estimated for lumbar spine lateral procedure i.e. 19 mSv which may be comparable with 30 mGy as per BSS within the usual range of deviation.

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