

**CLINICAL RELEVANCE OF LUMBAR –XRAY PRESCRIBED TO THE PATIENTS OF LOWER BACK PAIN: AN OBSERVATIONAL STUDY****Dr. Dwarka Prasad Agarwal<sup>\*1</sup> , Dr. Shyam Mohan Dixit<sup>2</sup>**

1. Associate Professor, Department of Radio-diagnosis, 2 Associate Professor, Department of General Surgery, Pacific Medical College and Hospital, Udaipur.

\*Email id of corresponding author- [drdpagarwal@gmail.com](mailto:drdpagarwal@gmail.com)

*Received: 01/01/2016**Revised: 06/08/2016**Accepted: 25/08/2016***ABSTRACT**

**Objective:** To assess the relevance of lumbar X-Ray for the patients of lower back pain, and find out the age groups in which the X-Rays are least useful. **Material and methods:** A total of 128 patients visiting orthopaedics OPD of Pacific medical college and hospital, Udaipur, India from June 2015 to Nov 2015 were randomly selected and included in the study after their consent. Follow up was done with the consulting physician regarding the alteration of treatment, if any, after the X-Ray. **Results:** Out of 128 patients, only 32.03% of the patients had relevant findings on the X-Ray and the remaining 67.96% did not. Younger patients were found to be more likely to have a normal radiograph as compared to the older age groups. In the age group of 45-54 years, the most common diagnosis made by the X-Ray were infective causes of back pain (5 patients), sclerotic metastasis of lumbar spine (1 patient), osteoporosis (15 patients) and collapsed vertebral body due to osteoporosis (4 patients). **Conclusion:** Lumbar spine radiography only for lower back pain does not provide much clinical utility in terms of patient management and hence needs to be regulated. Appropriate guidelines should be issued to reduce unnecessary radiography referrals of routine practice.

**Key words:** lower back pain, lumbar spine radiography

**INTRODUCTION:**

There is a high prevalence of Indian adults reporting experiencing symptoms of low back pain. The use of X-rays as a diagnostic modality dates back to 1900s (1,2). The recent decade, however, has seen a significant rise in the use of X-ray imaging for a wide spectrum of diseases. Majority of such patients come to the OPD with non specific diffuse back pain, acute or chronic, with or without other associated complains.

Lower back pain (LBP) is defined as pain and discomfort, localized between the costal margins and inferior gluteal folds, with or without leg pain. In most cases, acute LBP is self-limited and resolves within four to six weeks of onset, with

only a small proportion (2% to 10%) of patients developing chronic LBP (3,4). Advising lumbar radiography to such patients is a common practice, but is advised against in the absence of specific markers of diseases by several agencies like the Australian academic press (5).

Lumbar spine radiographs are non specific in the detection of many serious conditions and identify many minor abnormalities that may be coincidental to the patient's symptoms.

Lumbar spine imaging is one of the examinations with the highest radiation dose in conventional

radiography, with radiosensitive structures like breast in close proximity. Even though the lead shielding leads to dose reduction to the superficial organs, the adverse effects of unnecessary radiation cannot be overlooked (6,7,8).

The American College of Radiologists' (ACR) does not recommend imaging for uncomplicated lower back pain in one of their recent studies (9). Following are the recommendations for performing spinal radiography in patients-

Risk factors associated with serious spinal abnormality (red flags) – international recommendations (10)

- Unexplained weight loss
- History of cancer
- Unexplained fever
- Patient over 50 years
- Intravenous drug use
- Prolonged use of corticosteroids
- Severe unremitting night pain
- Significant trauma
- Pain that gets worse on lying down
- Features of Cauda Equina syndrome (urinary retention, saddle anaesthesia, etc)

There is no doubt that radiation technology has greatly improved the diagnosis and treatment of diseases. There is added benefit of psychological satisfaction to the patient after having undergone an X-RAY examination. While some risk is generally acceptable when there is clear clinical and psychological improvement in the patient, there are obvious adverse effects that depend on the type and intensity of the radiation involved (11, 12). There is also an increase in the burden on the radiology department and raised radiation exposure to the technicians in the radiology labs, along with unnecessary monetary expenses.

The study was conducted with the objective of assessing the relevance of lumbar X-Ray for patients coming to our OPD with complains of lower back pain and to correlate the significance of lumbar X-Ray with the age groups of the patients, and find out the age groups in which lumbar X- Rays are mostly normal and therefore, not useful.

## MATERIAL AND METHODS

The study is an observational study conducted in the radiology department of Pacific medical college and hospital, Udaipur, for a period of 6 months, from June to November 2015. 128 patients that came to the radiology department for lumbar spine X-Ray were included in the study.

Exclusion criteria- patients who were lost during follow up.

Consent was taken from the patients and the ethics committee of the institute.

The age, gender and consulting physician of the patients were noted. The change or progress in the treatment of the patients after X-Ray was followed up with the treating doctor. The patients were divided according to their age groups and gender. The clinical relevance of the X-Ray was divided into two groups (normal and abnormal), based on the discussion with the treating doctor.

The data was encoded in the Microsoft excel sheet and subsequent statistical analysis was done by the SPSS software for windows.

## RESULT

The study was conducted on a total of 128 patients (56 females and 72 males). All the patients fell between 26 to 82 years of age and were divided into 6 groups as shown in table 1. Maximum referral was seen for the age group

of 35-44 years (49.2%) followed by the age group of 45 to 54 years (33.5%).

The clinical relevance of performing the X-Ray was studied under two groups, normal (no change in treatment) and abnormal (change in treatment after X-Ray). The correlation of these with the age groups is shown in Figure 1. X-Ray was most beneficial to the age group of 45-54 years, and the X-Rays done for the age group of 35-44 years were mostly unnecessary. Younger age groups demonstrate less need for X-Rays as compared to relatively older age groups.

As a whole, out of 128 patients, only 41 patients (32.03%) had relevant findings on X-Ray and the remaining 87 patients (67.96%) did not.

In the age group of 45-54 years, the most common diagnosis made by the X-Ray were infective causes of back pain (5 patients), sclerotic metastasis of lumbar spine (1 patient), osteoporosis (15 patients) and collapsed vertebral body due to osteoporosis (4 patients).

## DISCUSSION

The patients that came to the radiology department for lower back pain were subjected to lumbar spine X-Ray as prescribed by the consulting physician. Our study showed that only 32.03% of these patients showed any significant findings on X-Ray that altered or assisted their treatment in anyway. The remaining 69.96% (majority) of the X-Ray were mostly unnecessary, and if anything, provided the patient with nothing more than psychological satisfaction. A similar study conducted by Zafar et al in 2015 showed that 81% of the patients had minimal or no radiographic findings, and did not directly benefit the patient in anyway (13).

Similar results were documented in a study conducted in America in 2005 by Kendrick et al

(14) and in the UK in 2001 by Espeland et al (15). Both these showed that a majority of patients were given radiography without identifiable indication for imaging and did not offer improvement in terms of management of such patients.

Our study shows that maximum referral of patients for X-Ray was in the age group of 35-44 years. In the study conducted in Pakistan (13), maximum referrals were of patients in the age group of 20-39 years. In the category of maximum referrals, a significant proportion of patients were basically given unnecessary X-Rays, hence showing that patients of the younger age group receive more unnecessary X-Rays as compared to older age groups. This can be supported by the fact that younger people are less likely to have conditions like osteoporosis that commonly cause lower back pain. Also, younger age groups are more sensitive to radiation damage, hence there is need to regulate the unnecessary referrals.

Lumbar X-Ray cannot rule out infection or malignancy in its earlier stages. Even when the findings are positive, a more advanced diagnostic modality is often required to confirm the diagnosis. The usefulness of this technique, therefore, can be questioned, considering the number of such X-Rays that actually give a positive finding is less than half. Busse et al. in Canada concluded that patient factors (e.g. the desire for imaging), and clinician factors (e.g. defensive medicine) may have to be considered to optimally reduce unnecessary spine-related imaging (16).

There is obvious need for regulation on the use of X-Ray by physicians in India considering the limited clinical utility and adverse effects. Even the psychological benefit of the procedure is not applicable in a developing country like India,

where the cost of the procedure can be distressing for most patients. Several countries like Australia, Germany France, Europe etc have issued guidelines for the management of lower back pain and most of these guidelines restrict the use of radiographs in the management and even offer recommendations for formulating such guidelines (17).

Also, there is need to reduce the case burden in most government run radiology departments in India.

## CONCLUSION

Majority of X-Rays prescribed to the patients are unnecessary and should be regulated considered the adverse effects, limited clinical utility and the ever increasing work load in radiology departments across the country.

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**TABLE 1: AGE GROUP OF PATIENTS**

AGE (in years)	NO. OF PATIENTS
25-34	6 (4.6%)
35-44	63 (49.2%)
45-54	43 (33.5%)
55-64	13 (10.1%)
65-74	3 (2.3%)
75-84	1 (0.78%)
<b>TOTAL</b>	<b>128 (100%)</b>

**FIGURE 1: RELEVANCE OF X-RAY FOR DIFFERENT AGE GROUPS**