

## Necessity of Radiography in Young Adults presenting with Low Back Pain of Short Duration

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### ABSTRACT

**Background and Objectives:** The occurrence of low back pain of short duration and without positive clinical findings is high. 15% and 30% of the population suffer from this condition. Young working adults are most commonly affected by this condition. Aim of this study is to assess the necessity of plain radiography of lumbosacral spine in diagnosing and treating young patients presenting in Orthopaedic outpatient department with low back pain of short duration without history of trauma and no positive clinical findings.

**Methods:** We prospectively studied 500 young patients of age between 25 to 40 years presenting with low back pain of less than 3 months duration without any history of trauma and no positive clinical finding. We excluded patients with history of trauma, fever, patients with radiating pain, neurodeficit, Patients with bladder/bowel complaints and Patients with any other systemic disorder. All these patients received standard treatment in the form of short term medication, postural training and application of ergonomic principles while working.

**Results:** 64% of the patients recovered fully within 2 weeks of treatment. 36% of the patients were not relieved hence Lumbosacral spine radiographs were performed after 2 weeks of treatment. Positive findings on radiographs were early degenerative changes and loss of lumbar lordosis due to para-spinal muscle spasm, seen in 9.7% of the patients in whom radiographs were performed. These radiographic changes were not indicative of different modality of treatment, hence we continued the same treatment and further 31% of the patients were recovered fully after 4 weeks of treatment.

**Interpretation and Conclusions:** Performing lumbo-sacral radiographs does not have any influence on treatment or outcome in young patients presenting with low back pain of less than 3 months duration without any history of trauma and no positive clinical finding.

**Key words:** Low back pain, Lumbosacral spine radiograph

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### INTRODUCTION

Low back pain of short duration is the most common orthopaedic problem in all age groups. Young working population also face this problem leading to absentees from work and a huge loss of man hours.<sup>1,2</sup> The occurrence of low back pain of short duration without positive clinical findings is high, with somewhere between 15% and 30% of the population developing this condition, mostly in adulthood.<sup>3,4,5</sup> In almost all these patients the condition is due to heavy physical work, bad posture and poor ergonomics during work. Most of these patients can be cured successfully with short term medication, postural training and application of ergonomic principles while working.<sup>3,4</sup> Therefore performing radiographs do not have any influence on treatment and outcome in this condition.<sup>5,6</sup> But still some clinicians perform radiography routinely in the

absence of trauma or positive clinical findings suggestive of serious low-back problems on their first visit.

Aim of this study is to assess the necessity of lumbosacral spine Radiographs in diagnosing and treating young patients presenting in Orthopaedic outpatient department (O.P.D.) with low back pain of short duration without history of trauma and no positive clinical findings. Secondary aim of this study is to know the incidence of positive radiological findings in these patients.

### MATERIALS AND METHODS

500 young adults of age between 25 to 40 years with low back pain of less than 3 months duration and no positive clinical findings who attended Orthopaedic O.P.D. at our institute from March 2015 to May 2015 were prospectively studied. We excluded patients with history of trauma, fever, patients with radiating pain, neurodeficit, Patients with bladder/bowel complaints and Patients with any other systemic disorder. The study was approved by the Institutional ethical committee. Ethical guidelines for medical research on Human participants were followed.

Detailed clinical history and examination findings were noted down on case report forms by 3 orthopaedic surgeons. Case report form contained following points:

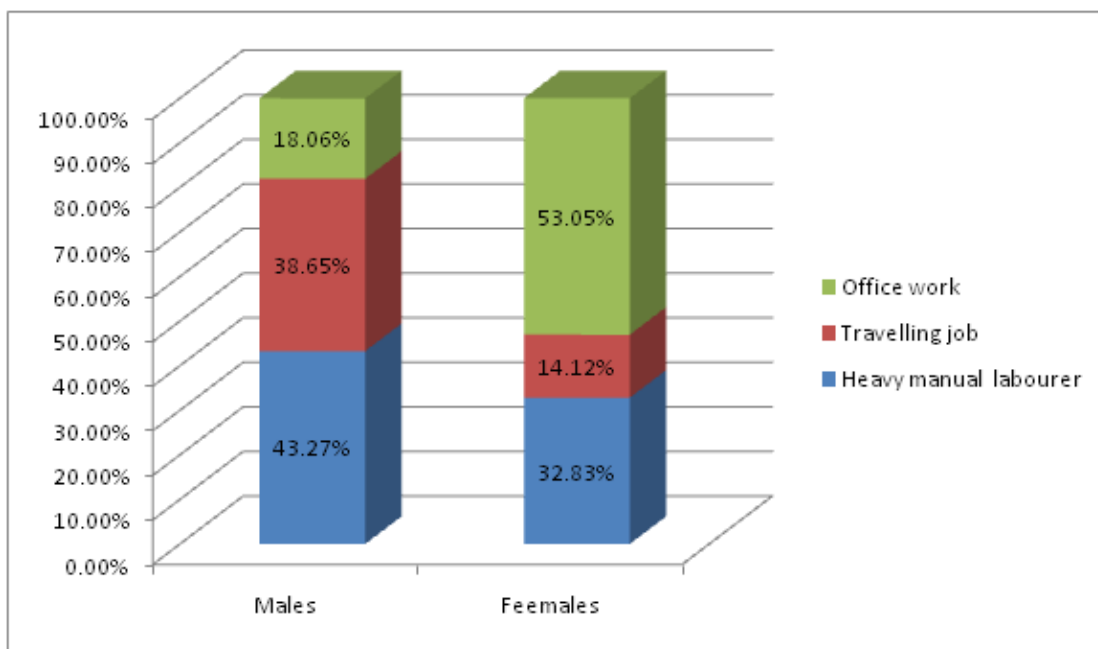
1. Demographic characteristics: Age, gender, height and weight.
2. Nature of job: sedentary / heavy manual laborer.
3. Written informed consent.
4. Physical exercise.
5. Aspects related to mental health: anxiety, emotional instability, sleep disturbances.
6. Visual analogue scale for low back pain: 0-10 cm (VAS low back pain)
7. Site of tenderness.
8. Standing toe-touch test: to assess flexibility of lumbar region.
9. Findings on Lumbosacral spine Radiographs.
10. Response to the treatment, VAS score at each visit, any recurrence of symptoms and further progress of patient's condition.

All these patients received standard treatment in the form of short term medication, postural training and application of ergonomic principles while working. All patients were followed up for three months. At every follow up intensity of pain was recorded according to Visual analogue scale for low back pain. 64% of the patients were cured completely within 2 weeks of treatment. Patients who were not recovered after 2 weeks of treatment were subjected to Lumbosacral spine radiographs. Positive findings on radiographs were early degenerative changes and loss of lumbar lordosis due to para-spinal muscle spasm, seen in 9.7% of the patients in

whom radiographs were performed. These positive radiographic findings were not indicative of requiring different modality of treatment. Hence we continued with the same modality of treatment and out of remaining 36% of patients, 31% were relieved in mean period of 5.5 weeks of treatment. 5% of the patients had recurrent episodes of low back pain after treatment. These patients were subjected to Magnetic Resonance Imaging and routine haematological tests. These tests were negative in these patients. These patients responded late – after a mean period of 7 weeks of treatment but the final mean VAS score was 1.50.

**RESULTS**

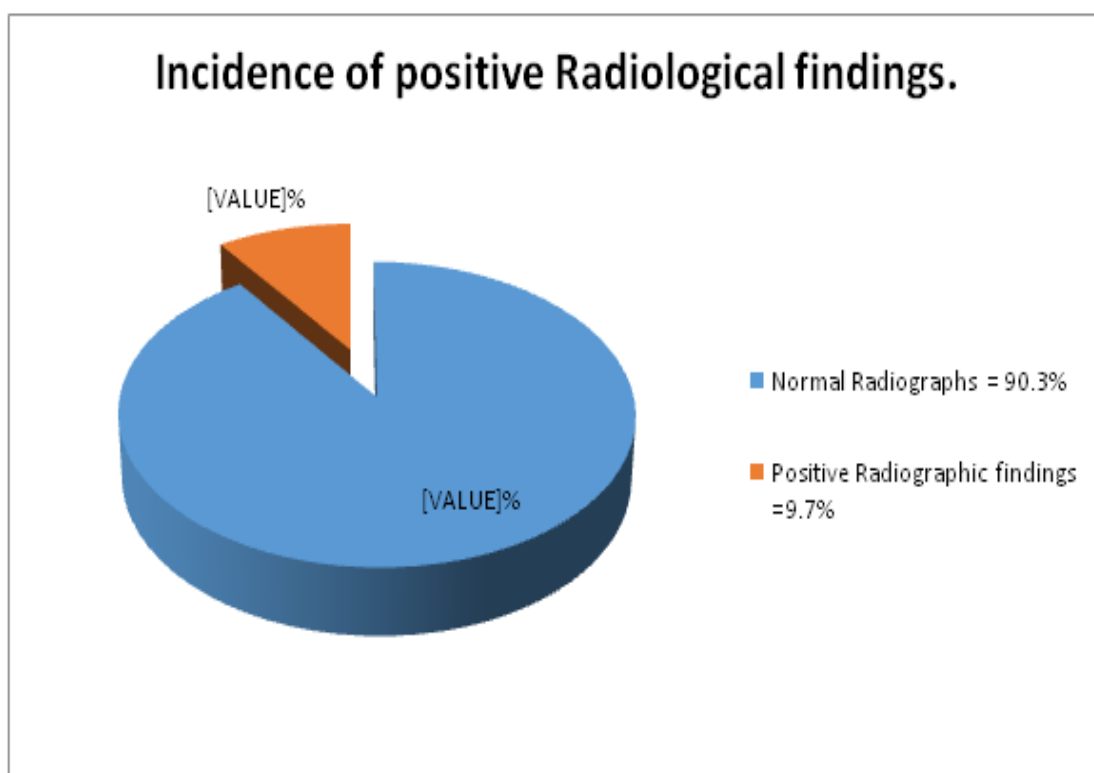
239 Males and 261 Female patients (Total 500) were included in the study. Mean Age of these patients was 34.7.43 patients lost follow up, hence 457 patients were available for final evaluation. 64% of the patients recovered fully within 2 weeks of treatment. 31% of the patients were recovered fully after a mean period of 5.5 weeks of treatment. Hence total 95% patients were cured completely with short term medication, postural training and application of ergonomic principles while working. The final VAS score was zero in all these patients. Complications occurred in 5% of the patients who were recovered but the low back pain had recurred after mean period of 3 weeks. These patients were subjected to Magnetic Resonance Imaging and routine haematological tests. These tests were negative in these patients. These patients recovered late – after a mean period of 7 weeks of treatment but the final mean VAS score was 1.50.



**Fig. 1: Work pattern in patients of low back pain of short duration and no positive clinical finding**

**Table 1: Positive radiological findings**

Positive radiological findings	Number of male patients	Number of female patients	Total number	Incidence of positive radiological findings. %
Loss of lumbar lordosis (suggestive of para-spinal muscle spasm)	06	05	11	6.7%
Early degenerative changes (defined by the presence of disc space narrowing, osteophytes, and sclerosis)	03	02	05	3%
	09	07	16	9.7% (Total)



**Fig. 2: Incidence of positive radiological findings in patients of low back pain of short duration and no positive clinical finding**

**DISCUSSION**

Low back pain of short duration may be defined as pain of less than 12 weeks duration.<sup>7</sup> Most of these cases of low back pain are ‘non-specific’ in that they have no identifiable cause, and serious pathologies are rare. Outcome of treatment with short term medication, postural training and application of ergonomic principles while working is excellent in these patients as there is no underlying pathology seen in these patients.<sup>8,9</sup> Patient history and physical examination are used to differentiate non-serious from possible serious conditions.

Signs and symptoms suggestive of serious pathology in low back pain are:<sup>10,11</sup>

- Fever.
- Weight loss.
- Radiating pain.
- Motor weakness.
- Sensory loss.

- Abnormal reflexes.
- Saddle anaesthesia.
- Bladder and/or bowel incontinence or retention of recent onset.

Factors leading to development of low back pain of short duration are biomechanical alterations to the spine caused by mechanical overburdening and incorrect posture.<sup>10,11,12</sup> Excessive travelling on bike as in sales personals in India and in females after childbirth may be potential risk factors for its development.

All these can be successfully treated with short course of medication, postural training and application of ergonomic principles while working.<sup>12</sup> For this reason all these patients do not require radiographs at their first visit in orthopaedic O.P.D.<sup>6,13-17</sup> Radiographs in these cases have been shown to demonstrate no abnormality or minor

degeneration.<sup>8,9,10,12</sup> Radiographic studies in patients without back pain show a similar prevalence of degenerative changes to those found in patients with low back pain of short duration and no positive clinical findings.<sup>13,14</sup>

The benefits of Radiographs are immense and have revolutionized the practice of medicine. The digitization and clinical efficacy of Radiography have resulted in its wide use in diagnosing many disorders, to rule out many disorders and sometimes may be overuse. Any Individual patient might have undergone Radiographic examinations in past and may require it in future for similar or other systemic disorders. To reduce the quantity of Radiation received by each individual patient, this investigation should be performed only when it is absolutely necessary. This is very important especially in young individuals in their reproductive age group as performing too many Radiographs have possibility of inducing neoplasm.<sup>18,19</sup> This problem can be minimized by preventing its inappropriate use.

**Evidence:** Based studies do not recommend routine use of radiographs in the absence of signs and symptoms suggestive of serious pathology in low back pain of less than 12 weeks duration.<sup>20,21</sup> Despite this, many clinicians prefer radiographic examination in these patients on their first visit in Orthopaedic O.P.D. Deciding when to perform Radiographs will be the first step in ensuring its appropriate use. In our study early degenerative changes and loss of lumbar lordosis due to para spinal muscle spasm were found in 9.7% of the patients subjected to Radiography. These positive radiographic findings were not indicative of requiring different modality of treatment.

Hence we continued with the same modality of treatment. 95% patients were cured successfully with short term medication, postural training and application of ergonomic principles while working. In 5% of the patients pain recurred. These patients were subjected to Magnetic Resonance Imaging and routine haematological tests to rule out other pathology. These tests were negative in these patients. These patients responded late – after a mean period of 7 weeks of treatment. Therefore information obtained from lumbosacral Radiographs did not contribute to the treatment and outcome in patients of low back pain of short duration and no positive clinical findings.

In summary, lumbosacral Radiographs are not necessary for treating young patients presenting with low back pain of short duration and no positive clinical finding.

## REFERENCES

1. Maetzel A, Li L. The economic burden of low back pain: a review of studies published between 1996 and 2001. *Best Pract Res Clin Rheumatol.*, 16 (2002), pp. 23–30.
2. Luo X, Pietrobon R, Sun SX, Liu GG, Hey L. Estimates and patterns of direct health care expenditures among individuals with back pain in the United States. *Spine.*, (2004), pp. 79–86.
3. Blyth FM, March LM, Brnabic AJ, Jorm LR, Williamson M, Cousins MJ. Chronic pain in Australia: A prevalence Study. *Pain*, 89 (2001), pp. 127–134.
4. Manchikanti L, Singh V, Datta S, Cohen SP, Hirsch JA. American Society of Interventional Pain Physicians. Comprehensive review of epidemiology, scope, and impact of spinal pain. *Pain Physician.*, 12 (2009), pp. E35–E70.
5. Tulder V, Maurits W, Assendelft, Willem JJ, Koes, Bart W, Bouter, Lex M. Spinal Radiographic Findings and Nonspecific Low Back Pain: Systematic Review of Observational Studies. *Spine*, 15 February 1997 - Volume 22 - Issue 4 - p 427–434.
6. Roger C, Rongwei Fu, Carrino JA, Deyo RA. Imaging strategies for low-back pain: systematic review and meta-analysis. *The Lancet*, 7 February 2009, Volume 373, No. 9662, p463–472.
7. Van Tulder M, Furlan A, et al. Updated method guidelines for systematic reviews in the Cochrane Collaboration Back Review Group. *Spine*. 2003;28(12):1290-9.
8. Koes BW, van Tulder MW, et al. Diagnosis and treatment of low back pain. *BMJ*. 2006;332(7555):1430-4.
9. Koes BW, van Tulder MW, et al. Clinical guidelines for the management of low back pain in primary care: an international comparison. *Spine*. 2001;26(22):2504-13.
10. Kovacs FM, Fernandez C, et al. Non specific low back pain in primary care in the Spanish National Health Service: a prospective study on clinical outcomes and determinants of management. *BMC Health Serv Res*. 2006;6:57.
11. Jones MA, Stratton G, Reilly T, Unnithan VB. Biological risk indicators for recurrent non-specific low back pain adolescents. *Br J Sports Med.*, 39 (2005), pg. 137–140.
12. Mc Guirk B, King W, et al. Safety, efficacy, and cost effectiveness of evidence-based guidelines for the management of acute low back pain in primary care. *Spine*. 2001;26(23):2615-22.
13. van Tulder MW, Assendelft WJ, et al. Spinal radiographic findings and nonspecific low back pain. A systematic review of observational studies. *Spine*. 1997;22(4):427-34.
14. Jarvik JG, Deyo RA. Diagnostic evaluation of low back pain with emphasis on imaging. *Ann Intern Med*. 2002;137(7):586-97.
15. Refshauge KM, Maher CG. Low back pain investigations and prognosis: a review. *Br J Sports Med*. 2006;40(6):494-8.
16. Kovacs FM, Fernandez C, et al. Non-specific low back pain in primary care in the Spanish National Health Service: a prospective study on clinical outcomes and determinants of management. *BMC Health Serv Res*. 2006;6:57.
17. Isaacs DM, Marinac J, et al. Radiograph use in low back pain: a United States Emergency Department database analysis. *J Emerg Med*. 2004;26(1):37-45.

18. Cécile M. Ronckers a, b, Charles E. Landa, et al. Cancer Mortality among Women Frequently Exposed to Radiographic Examinations for Spinal Disorders. *Radiation Research*: July 2010, Vol. 174, No. 1, pp. 83-90.
19. Tanford RW, Inst AP, Vance J. The Quantity of Radiation Received by the Reproductive Organs of Patients during Routine Diagnostic X-ray Examinations. *The British Journal of Radiology*. Jan. 2014 Volume 28, Issue 329.
20. Rheumatology Expert Group. *Therapeutic Guidelines: Rheumatology, version 1*. Melbourne: Therapeutic Guidelines Ltd; 2006.
21. Refshauge KM, Maher CG. Low back pain investigations and prognosis: a review. *Br J Sports Med*. 2006;40(6):494-8.