



ACUTE LOW BACK PAIN

RADIOGRAPHIC PREVALENCE OF COMMON CONGENITAL LUMBOSACRAL SPINAL ANOMALIES IN YOUNG PATIENTS PRESENTING WITH NON SPECIFIC ACUTE LOW BACK PAIN

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ABSTRACT... Objectives: X ray of the lumbosacral spine is widely used in our clinical setting early on in the management of patients presenting with nonspecific acute low back pain. This practice is in contradiction to the clinical practice guidelines however patient satisfaction is usually the main motive declared by clinicians following this practice. This study was conducted to detect the radiologic prevalence of the most commonly diagnosed congenital anomalies in lumbosacral spine X rays done for patients presenting with nonspecific acute low back pain. **Study Design & Setting:** Prospective descriptive study at Shalamar Hospital Lahore, Pakistan. **Duration of Study:** Six months from September 2014 to February 2015. **Subjects and Methods:** Radiographs of 400 patients presenting with non-specific acute low back pain and fulfilling the inclusion / exclusion criteria were examined. Data was analyzed on SPSS version 13 and percentage and frequency of patients with non-specific acute low back pain with lumbosacral transitional vertebra (LSTV), spina bifida and spondylolysis was calculated. **Results:** Out of 400 patients 185 were males and 215 were females. Age of the patients ranged from 15 to 36 years with mean age of 28 (SD \pm 4.84). 145 patients (36.25%) were found to have congenital anomalies of lumbosacral vertebrae in question. The prevalence of LSTV was 19.5% (78 patients), spina bifida was 10% (40 patients) and spondylolysis was 9% (36 patients). 2% (9 patients) had more than one anomaly. **Conclusions:** This study shows a higher prevalence of lumbosacral transitional vertebra (LSTV) and spondylolysis in Pakistani patients presenting with non-specific acute low backache, compared to that quoted in literature. This arguably may constitute a convincing argument in favor of obtaining lumbosacral spine X-rays early on in the management of young patients presenting with non-specific acute low backache.

Key words: Prevalence, lumbosacral transitional vertebra, spina bifida, spondylolysis, non-specific acute low back pain.

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INTRODUCTION

Acute low back pain (LBP) is a common disorder and is frequently observed in young patients.¹ It acquires particular importance as a cause of significant workday loss. Various radiologic modalities have been used in evaluation of patients presenting with acute LBP each with its merits and limitations. Well defined guidelines have been developed to guide the clinicians and radiologists in rationalizing the use of radiology in evaluation of these patients. This study focuses on a sub group of patients with acute LBP without any clinical symptoms or signs suggestive of a traumatic, infectious, inflammatory or malignant cause of the LBP – patients with ‘Nonspecific

Acute Low Back Pain’. X ray of the lumbosacral spine is usually the initial investigation ordered to manage patients with LBP. Standard clinical practice guidelines² recommend that X ray of the lumbosacral spine is unlikely to be of any benefit in decision making for treating patients with non-specific LBP. However clinical practice in our set up still witnesses a liberal use of X ray lumbosacral spine ordered early in the management of patients with non-specific LBP. Literature review reveals that clinicians support such use based on multiple reasons like it alleviates patient anxiety³, patients expect a clear diagnosis for their low back pain⁴ and the patients want to know what is causing their symptoms and may equate a decision to

not obtain imaging or provide a precise diagnosis with low quality care.⁵ Studies have shown that patient requests for diagnostic testing is a frequent reason for repeated office visits for chronic back pain.⁶ Studies^{7,8} have also revealed that use of low back pain imaging was strongly associated with how intensely patients believed imaging was necessary and a clinician is likely to order an investigation for nonspecific acute low back pain if a patient insisted on it even after the physician explained that it was unnecessary.

Congenital anomalies are a leading radiologic finding in patients with non-specific LBP who undergo X-ray of the lumbo-sacral spine.⁹ However whether these congenital abnormalities are the cause of LBP has not been proved. In this background we conducted this study to detect the radiologic prevalence of three common congenital anomalies of the lumbosacral spine namely lumbosacral transitional vertebra (LSTV), spina bifida (SB) and spondylolysis in patients presenting with non-specific low backache who were referred to our department for X ray of the lumbosacral spine.

PATIENTS AND METHODS

The study was carried out after due approval of the 'Institutional Review Board' at Shalimar hospital Lahore from Sep 2014 to Feb 2015. 400 patients of both sexes were included in the study based on the following criteria:

Inclusion Criteria

- A. Patients of either sex aged between 15 and 36 years.
- B. Patients with symptoms of acute LBP of less than six weeks duration.

Exclusion Criteria

- A. Patients with history of trauma, radiculopathy, degenerative osteoarthritis, inflammatory arthritis or malignancy.
- B. Patients with known or suspected pregnancy.
- C. Patients who refused consent to participate in the study.

After obtaining written informed consent frontal and lateral evaluation of standard lumbosacral spine radiographs was carried out of all patients independently by a senior consultant radiologist and a senior consultant surgeon. Data including age, sex and findings of radiographs including presence of LSTV, lumbarization and sacralization, spina bifida and spondylolysis were recorded. Data was analyzed using SPSS 13 with frequency calculated of age, sex and prevalence of LSTV, spina bifida and spondylolysis.

RESULTS

Data of 400 patients with non-specific LBP were included in the study. Gender and Age distribution of patients are shown in tables-I and II respectively. 145 patients (36.25%) showed congenital abnormalities in question whereas 255 patients (63.75%) did not have these anomalies as shown in Table-III. Out of these 145 patients with congenital abnormalities 78 (19.5%) had LSTV, 40 (10%) had spina bifida and 36 (9%) had spondylolysis. 9 patients (2%) had more than one anomalies. Highest prevalence of LSTV was recorded in 30 – 34 years age group (Figure-1), that of spina bifida was in the 20 – 24 years age group (Figure-2) while highest prevalence of spondylolysis was also recorded in the 30 – 34 years age group (Figure-3).

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	male	185	46.3	46.3	46.3
	Female	215	53.8	53.8	100.0
	Total	400	100.0	100.0	

Table-I. Gender of Patients

	N	Minimum	Maximum	Mean	Std. Deviation
Age of the patients	400	15.00	36.00	28.6650	4.84008
Valid N (listwise)	400				

Table-II. Descriptive Statistics Age of Patients

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	255	63.75	63.75	63.75
	No	145	36.25	36.25	100.0
	Total	400	100.0	100.0	

Table-III. Normal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	78	19.5	19.5	19.5
	No	322	80.5	80.5	100.0
	Total	400	100.0	100.0	

Table-IV. Transitional Vertebrae

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	40	10.0	10.0	10.0
	No	360	90.0	90.0	100.0
	Total	400	100.0	100.0	

Table-V. Spina Bifida

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	36	9.0	9.0	9.0
	No	364	91.0	91.0	100.0
	Total	400	100.0	100.0	

Table-VI. Spondylolysis

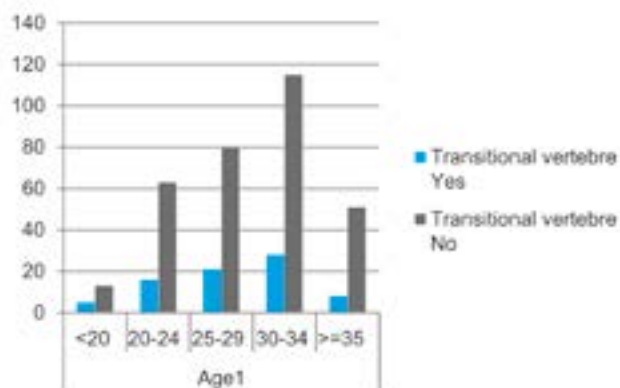


Figure-1. Transitional Vertebrae Percentage of Patients Crosstabulation

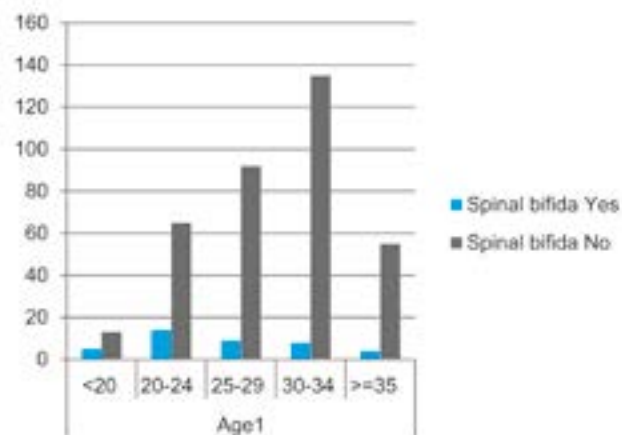


Figure-2. Spina Bifida Percentage of Patients Crosstabulation

DISCUSSION

This study shows that the cumulative prevalence of three common congenital anomalies of the lumbo-sacral vertebral column in patients presenting with non-specific LBP is 36.25% which is higher as compared to similar studies conducted elsewhere.^{9,10} This is due to the high prevalence of LSTV (19.5%) in our study as compared that reported by Secer et al. (4.5%) and French et al. (9.9%) however this prevalence is well within the 4 to 30% range reported in the review article by Konin et al.¹¹

The prevalence of spondylolysis in our study is 9% which is again high as compared to the 3 to 6% incidence reported in Caucasian population.¹² The prevalence of spina bifida in our study is comparable to that reported in similar studies.^{9,10}

What these results mean to the clinical practice remains debatable. Although an X ray of the lumbosacral spine in patients with non-specific low backache is not recommended in the clinical practice guidelines¹³ as it is unlikely to assist in management decisions however patient satisfaction is a something beyond the realms of statistical results. The point highlighted by this study is that for a phenomenon having prevalence as high as 36% the patients have a point in insisting for an X ray lumbosacral spine just to know whether they have the congenital anomalies in question. The authors suggest that apart from patients with specific contraindications to X ray exposure the rest should be counselled for the risks versus benefits of having this imaging in the clinical setting of non-specific acute low backache and clinicians should accede to the patients' wish if they want to have radiograph of the lumbosacral spine done.

CONCLUSION

This study highlights a high prevalence of lumbosacral transitional vertebra (LSTV) and spondylolysis in Pakistani patients presenting with non-specific acute low backache, based on review of plain radiographs. This may constitute a convincing argument in favor of obtaining lumbosacral spine X-rays early on in

the management of young patients presenting with non-specific acute low backache. The authors recommend further studies to elucidate the probable reasons underlying this higher prevalence.

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AUTHORSHIP AND CONTRIBUTION DECLARATION

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2	Dr. Saima Amin	Perception, Study design, Data collection & analysis	
3	Dr. Asma Bano	Data collection & Analysis	