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Common Radiographic Findings in Patients with Low Back Pain a Major Nigerian Teaching Hospital

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Abstract

Objective: *To identify common radiographic findings among patients presenting with low back pain.*

Methodology: *A retrospective study was carried out on 160 patients with low back pain that underwent x-ray of the lumbosacral spine at ABUTH. The collected data was organized and classified into groups based on age, sex, radiographic findings, location on the lumbar spine and patients' occupation. Mean, standard deviation and percentages were calculated and tabulated.*

Results: *Findings show that, low back pain is mostly in patients between 41-50 years of age accounting 28.1%. Likewise, those engaged in more than one activity 71.3%. Abnormal radiographic findings were mostly seen on L4 vertebral body representing 26.5%, and lumbar spondylosis is the most frequent finding with 51.2%.*

Conclusion: *The study has established various radiographic findings in patients with low back pain, and lumbar spondylosis is the most frequent in both males and females gender.*

INTRODUCTION

Low back pain is a very common disorder that affects 60% - 80% of the whole population, and is frequently observed in patients 30-50 years of age. It exhibits particular importance as a major cause of workday losses[1-4]. It is the fifth most common reason for all physician visits, and over half of the general population will seek medical attention for back pain at some point in their lives.[2]

There has been considerable research on low back pain. Studies have classified low back pain (LBP) as acute, lasting for (6) weeks or less with activity intolerance and related leg symptoms, sub-acute, lasting between 6-12weeks, and chronic, persisting longer than 12 weeks.[3]

Etiologies of low back pain include; mechanical injury, arthritis, sciatica, spinal fracture, malignancy, connective tissue disease, infection, caudal equine syndrome, metabolic causes, abdominal or retroperitoneal visceral or vascular process.[3] Studies also show that small percentage of patients with low back pain have pathologically definable problems. Which is classified as mechanical pain usually affecting people aged 20-55years with acute onset. It is associated with lifting of objects or bending, and confined to lumbosacral region. Non-mechanical pain, which is constant, has a little variation in intensity or with activity. Inflammatory pain has a more gradual onset and often occurs before the age of 30 years. Radicular (nerve root) pain has a severe sharp radiating quality.[4]

An increased risk of low back pain is associated with male sex, smoking, obesity, sedentary lifestyle, frequent lifting of children or heavy objects, poor general conditions of health, physically difficult work, certain occupational and sport activities, ergonomics and presence of depression or anxiety.[2]

The investigation of low back pain (LBP) may involve plain radiographs, CT, MRI, Myelography and radionuclide imaging. CT and MRI produced excellent images of the lumbar spine but are very expensive. Myelography is considered obsolete with the advent of MRI and CT, and radionuclide imaging is not readily available in this locality. Plain radiography of the lumbar spine is the most widely requested investigation in patients with low back pain because of its availability and affordability[5].

Based on the growing number of hospital visits of patients with cases of low back pain (LBP), this study aimed to identify common lumbar spine radiographic findings at Ahmadu Bello University Teaching Hospital Zaria. This would help the radiographers to know when to modify their technique to produce optimal radiographs for better diagnoses and patients management.

METHODOLOGY

This was a retrospective study conducted at the tertiary institution located in Shika, Zaria Kaduna State. Ethical clearance to conduct the study was obtained from the research committee of the institution. One hundred and sixty lumbosacral radiographs

(Antero-posterio and lateral projections) of patients that presented with history of low back pain were retrieved from the archive for the year 2009 and 2010. The information collected include: x-ray numbers for patients identification, sex, age, occupation, presenting complaint and resultant radiographic findings. The data was organized and classified based on patients age, sex, occupation and radiographic findings. Descriptive statistics with the SPSS statistical package was employed in organization and presentation of the data.

RESULTS

Of the 160 plain lumbosacral radiographs of patients used in the study, (50.6%) were males while 49.4% were females. The patients' ages ranged from 6 to 77 years with mean age of 43±15 years. Patients age grouping is shown in table 1, and age group 41-50 had the highest percentage of 18.1, followed by age groups 21-30 and 31-40 each having (17.5%).

Table (2) shows distribution of radiographic findings among sex. Lumbar spondylosis is the most common 52.4% and is seen mostly among female (58.2%), followed by straightening of normal lumbar lordosis (18.1%) which is seen mostly among males (22.2%).

Most of the lesions were seen at the level of L4 vertebral body (26.5%), followed by L5 vertebral body (22.3%) (table 3).

Table (4) shows distribution of patients based on their occupations. Those with non-specific occupations (those engaged in more than one activity) formed the bulk (71.3%) of the subjects in the study followed by those involved in housekeeping (14.4%).

Table 1: Patients age group

Age (years)	Frequency	Percentage
1-10	1	0.6
11-20	9	5.6
21-30	28	17.5
31-40	28	17.5
41-50	45	28.1
51-60	29	18.1
61-70	12	7.5
71- Above	8	5.0
Total	**160**	**100**

Table 2: Common radiographic findings relative to subjects gender

Radiographic Findings	Males (%)	Females (%)	Total (%)
Lumbar spondylosis	38(46.9)	46(58.2)	84(52.5)
Straightening of normal lumbar lordosis	18(22.2)	11(13.9)	29(18.1)
Pott's disease (TB)	1(1.2)	2(2.5)	3(1.9)
Metastatic (changes) disease	2(2.5)	2(2.5)	4(2.5)
Spondylolisthesis	2(2.5)	4(5.1)	6(3.8)
Osteophytes	3(3.7)	6(7.6)	9(5.6)
Scoliosis	2(2.5)	0(0.0)	2(1.3)
Spinal bifida	-	2(2.5)	2(1.3)
Narrowing/collapse disc space	2(2.5)	1(1.3)	3(1.9)
Osteoarthritis	-	1(1.3)	1(0.6)
Reduction in bony density	1(1.2)	-	1(0.6)
Meningocele	1(1.2)	-	1(0.6)
Normal findings	11(13.6)	4(5.1)	15(9.4)
Total	**81(51)**	**79(49)**	**160(100)**

Table 3: Incidence of findings on different regions of the lumbosacral spine

Region	Frequency	Percentage
L1	28	8.3
L2	57	17.0
L3	74	22.0
L4	89	26.5
L5	75	22.3
S1	12	3.6
S2	1	0.3
Total	**336**	**100**

Table 4: Distribution of patients based on their occupations

Occupation	Frequency	Percentage
Housekeeping	23	14.4
Trading	2	1.3
Clergyman	1	0.6
Farming	4	2.5
Student	9	5.6
Civil servant	6	3.8
Businessman	1	0.6
Non specific	114	71.3
Total	**160**	**100**

DISCUSSION

Low back pain is a common musculoskeletal disorder complaint that can originate from many spinal structures including ligaments facet joints, the vertebral periosteum, the paravertebral musculature and facia, the annulus fibrosus and spinal nerve root. The pain can be severe enough to cause debilitation.[6]

Low back pain is a symptom that cannot be validated by an external standard. It is a disorder with many possible etiologies, occurring in many groups of the population, and with many definitions.[7]

Radiographic evaluation of low back pain plays an important role in the management of patients even when its yield is reported to be not high. It is also the most common and inexpensive imaging tool for patients with low back pain compared to the modern Neuro-imaging modalities like CT, MRI and RNI.[5]

The study has shown that people aged 41-50 recorded the highest percentage incidence of low back pain (28.1%) (table 1). This is in keeping with findings of Secer et al.[1] who reported that low back pain was most commonly seen in people aged between 30-50 years.

The prevalence of low back pain is reported to be higher among males[8]. This agrees with the findings of the current study which shows higher prevalence of low back pain in males than females.

In the present study L4 vertebral body is the area that is commonly affected. This agrees with the results reported in Igbinedion & Akhigbe[5] who showed L4 vertebral body as the most affected part of the spine in patients with low back pain. A similar observation has also been made in another study.[9]

In the study area the most common radiographic finding is lumbar spondylosis in both males and females representing (52.5%). Whereas in studies conducted by Igbinedion and Akhigbe[5], and that of

Kaplan et al.[7] the most common findings were osteophytes and degenerative bone diseases respectively. This may suggest that findings in patients with low back may be largely related to the type of task performed.

Studies have revealed high prevalence of lumbar spondylosis in males than females[8,10], this is dissimilar with the findings of this study which shows higher prevalence of lumbar spondylosis in females (58.2%) than males (46.9%) counterpart.

Non-specific low back pain is the most common cause of low back pain , and is generally due to a sprain or strain in the muscle of the back and soft tissue. Table (4) shows distribution of findings based on patients' occupation. Those with non-specified occupation ranked highest with 71.3%. This group of people is believed to be engaged in more than one activity resulting in constant stress and strain on the back. The findings agree with that of Wise[2] who reported increased back pain is associated with multiple activities.

CONCLUSION

Low back pain continues to be an important clinical, social, economic, and public health problem, affecting the population of the entire world. Various radiographic findings in patients with low back pain have been identified in this study with lumbar spondylosis being the most common. People in the age bracket of 41-50 years are the most commonly affected by low back pain.

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