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ORIGINAL RESEARCH ARTICLE

Common Magnetic Resonance Imaging (MRI) patterns in patients with low back pain in Eldoret, Kenya

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ABSTRACT

Low back pain (LBP) is the most prevalent musculoskeletal condition and one of the most common causes of disability in the adult population. Kenya has an increasing number of patients who present with LBP and lacks data on its causes. The presentation, detection and characterization of lesions in LBP are sometimes clinically indistinguishable, necessitating evaluation by MRI. This has been well established in developing countries, but is not well documented in the developing world. This paper examines the most common MRI patterns in patients with low back pain seen in Eldoret, Kenya. The study was conducted at the Radiology and Imaging departments of the Eldoret and Mediheal Hospitals in Eldoret, Kenya. It was a cross-sectional study whose subjects were adult patients with LBP referred for lumbar spine MRI. A total of 185 patients, with LBP sampled systematically, with no history of lumbar surgery and no contraindications to MRI underwent MRI from October 2011 to April 2012 were studied. Data was analyzed using STATA version 10. Descriptive statistics were carried out for continuous variables using mean, median, standard deviation and inter-quartile range. Frequency tables were generated for categorical variables. The Chi-square test and Fishers' exact test were used to test for any associations. A p-value < 0.05 was considered statistically significant. The most common site for degenerative findings was L4/L5 followed by L5/S1. Nerve root compression was the most common complication. It was concluded that LDD is common in the lower lumbar regions of both sexes.

Keywords: Common Magnetic Resonance Imaging Pattern, Patients, Low Back Pain, Eldoret, Kenya.

INTRODUCTION

Low back pain has been there since time immemorial. The oldest surviving surgical text, the Edwin Smith Papyrus of 1500 BC, gives the earliest account of LBP and includes a case of back strain.[1] The problem of LBP in the developed world nears epidemic proportions and is on the increase with a lifetime prevalence of LBP (at least one episode of LBP in a lifetime) reported to be up to 84%.[2] Data from the developing world and particularly Africa are scanty. In Togo and Nigeria the prevalence of LBP was reported to be at par with levels recorded in industrialized countries.[3, 4]

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In Kenya, the prevalence of LBP in patients in a private facility was reported at 10%.[5]

Etiology and Diagnostic imaging of Low Back Pain

LBP is clearly an important health problem whose etiology can be indefinable or defined due to degeneration, infective or neoplastic lesions.

Low back pain has been described as "an illness in search of a disease".[6] Lumbar radiography may not identify all the abnormalities related to LBP symptoms and may be harmful because it exposes the gonads to ionizing radiation.

MRI has several advantages including multi-player capabilities, superior soft tissue contrast and lack of ionizing radiation. It provides useful information that is likely to affect treatment.

Several studies have detailed the sensitivity and specificity of MRI in detecting different spine disease conditions such as neoplasms, infiltrative marrow disease, infections, spondyloarthropathies and degenerative disc disease.[7-17]

Likewise, the sensitivity of MRI for diagnosing complications resulting from degenerative disc disease like stenosis and nerve root compression is high.[18, 19]

MRI Patterns of Low Back Pain

Most of the studies regarding MRI patterns of LBP have been done in the developed world. However, information about studies done on the radiological patterns of LBP in developing countries is scanty. Kebede et al. in their study talks about the fact that the recommended primary imaging modality, MRI is inaccessible and expensive.[20]

MRI patterns have been reported by McNally et al. in 1000 patients with non-traumatic LBP without radiculopathy.[21] The results of this study showed that malignancy, infection, osteoporotic vertebral fracture, spondylitis, pars defects and cord tumours were detected in 20%. This study found 8% neoplasms but excluded benign neoplasms like vertebral hemangiomas by Younis et al. A study of 170 patients in Lahore mainly yielded findings of degenerative disc disease with other abnormalities like infective, inflammatory, neoplastic or congenital anomalies of the spine being excluded.[22] In India, Verma et al. A retrospective study of 232 patients found the incidence of lumbar disc degeneration to be most frequent.[23] This study likewise excluded spinal infections and tumours. In Cameroon Uduma et al. A study of 48 patients yielded 33.3% disc hernia, 37.5% spondylosis, 2.08% spondylodiscitis and one elderly patient with a metastatic bony lesion.[24] In Tanzania, Mboka et al. A study of 165 patients found 83% to have degenerative disc disease.[25] This study also excluded patients with inflammation, infections, and neoplasms.

The Most Common MRI Pattern in Low Back Pain

Lumbar disc degeneration (LDD) is common in patients with LBP. In Malaysia, Yong et al. in their study have concluded that the most frequent finding in 91.2% of patients with LBP was intervertebral disc degeneration.[26] In Tanzania, a study of 165 patients by Mboka et al. found 83% have degenerative disc disease.[25] This study also assessed other degenerative findings such as medic (endplate plate) changes and disc displacement in Hong Kong, Samartzis et al. A study of 2599 patients yielded 1890 subjects (72.7%) with degenerative disc disease.[27] A study of 362 patients in Jamaica was dominated by degenerative disc disease in 283 (78.2%) subjects.[28] In Nigeria, Irurhe et al. a retrospective study of 270 patients yielded 37% disc degeneration.[29]

The Common Disc Contour Abnormalities in Patients with Low Back Pain

Different disc contour abnormalities result from LDD are referred to as either herniated or prolapsed by many physicians.[30] They can further be classified as "normal, bulge and herniation; broad based protrusion, focal protrusion and extrusion.[31] A disc bulge is a circumferential enlargement of the disk contour in a symmetric fashion in a weakened disk, the annulus is intact with disk extension outward involving >50% of disk circumference or diffuse (nonfocal, non-osseous material extending beyond the normal disc space in a circumferential manner.[32,] 33 A disc herniation "is a localized/focal displacement of disk beyond the intervertebral disc space.[31] A herniated disk can be protruded, extruded or sequestrated.[30] A disc protrusion is a focal displacement disk material beyond the margins of adjacent vertebral endplates involving <50% of disc circumference. An extrusion is a herniated disc in which, has a small connection with the parent disc (narrow neck).[31] Many studies have been done using this classification.[22-25, 30]

The Most Common Site of Lumbar Disc Degeneration in Patients with Low Back Pain

The most common site for disc contour abnormalities are the lower lumbar, i.e L4/L5 and L5/S1. [28, 34]

The Common Complications of Lumbar Disc Degeneration

Common complications of lumbar degenerative disc disease are neural compression, chemical irritation of nerves, osseous abnormalities, segmental instability, spinal stenosis and pain.[26, 28]

Problem Statement

Low back pain is a burden to society and a major public health problem especially because it results in disability in the working population. The problem of LBP is on the rise and 11% to 84% of the population in the developed world will

experience back pain at some point in their lives.[2] In sub-Saharan Africa, studies in Uganda and Togo put the LBP prevalence at 20% and 35% respectively.[3, 35] The presentation, detection and characterization of lesions in LBP using MRI is a practice well established in developing countries. However, studies showing the use of MRI for the evaluation of LBP cases are emerging but are not well documented in the developing world. Doctors in Kenya are challenged to identify the etiology and predisposing factors of LBP among patients. The use of MRI to detect anatomical changes (disk contour abnormalities, e.g bulges, herniations) and tissue properties (disc dehydration, reactive marrow changes) involving the intervertebral discs, bone marrow, neuroforamina, spinal canal and facet joints should therefore be embraced. MRI imaging findings reported by radiologists together with clinical parameters (lumbago, neurogenic claudication, sciatica) may be potential good predictors of surgical treatment outcomes.

Limitations of the Study

The population was a highly selected cohort of patients who could afford an MRI excludes many poor patients who may have had the other patterns. Patients who were referred for an MRI but did not turn up due to socioeconomic reasons like lack of funds for both the MRI scan and transport.

MATERIALS AND METHODS

Study Site

This study was carried out at The Eldoret Hospital and Mediheal Hospital in Eldoret East District in Kenya. The District lies between 34° 50’ and 35° 37’ East longitude and 0° 03’ South and 0° 55’ North latitude. It is located 320 Kms Northwest of Nairobi serving not only the residents of the Uasin Gishu County, but also the entire North Rift, Western Province, and parts of Western Uganda and Southern Sudan. The Eldoret Hospital and Mediheal are both private multi-speciality hospitals with free standing imaging centers where the MRI scanners for the study are located. The study was conducted in the MRI departments of these hospitals.

Study Design

This study was a hospital-based cross-sectional study conducted from October 2011 to April 2012.

Study Population

The study included patients with LBP with or without radiculopathy who were referred for lumbar spine MRI at the radiology departments of the Eldoret and Mediheal hospitals from October 2011 to April 2012.

Sampling Procedure

Every other patient with LBP with or without radiculopathy referred for lumbar MRI was

included in this study systematically. The sample size was calculated from the Fisher's formula

$$n=Z^2P(1-P)/E^2$$

Where:

n= sample size,

Z = (1.96)

P = prevalence = 28.2%. This was the prevalence the of degenerative disc disease based on a study by Igbidenon et al.[36]

95% confidence interval was used.

E = error margin 5%

Therefore n= $(1.96)^2 \times 0.28 (1 - 0.28/ (0.05)^2$

n = 310

To adjust for finite population we used the formula

$n_f = n /1+n/N$

Where N= population size.

In this case we anticipated 400 MRI done in seven months, nf = sample size after adjusting for finite population, n = sample size from Fisher's formula

nf=310/1+309/400 =175

We sampled an extra 5% to account for possible non-response

n=175 + 10 (5% of 175) so the sample size in this study was 185 patients.

Inclusion Criteria

All patients with LBP with or without radiculopathy as the primary and only diagnosis or in association with other pre-existing conditions referred for MRI.

Exclusion Criteria

Contraindications to MRI (metallic implants in the lumbar spine, pacemakers); prior lumbar spine surgery, and Pregnancy were considered in the exclusion criteria.

Study Flow

The author participated in the recruitment of patients with LBP from the two centres in Eldoret, Kenya: Mediheal and The Eldoret Hospital. She identifies potential patients when their physicians ordered MRI scans of the lumbar spine after diagnoses LBP with or without radiculopathy. We targeted patients referred not only by general, but also patients from surgical subspecialty physicians, i.e. general, orthopedic and neurosurgeons. The author participated actively in the diagnostic triage of these patients to make sure that all the patients met the eligibility criteria. All the eligible patients gave written informed consent. After enrollment the patients underwent an MRI of the lumbar spine. The MRI scans were conducted on systems with field strength of 0.25-0.30T. Two evaluators (principal investigator and one radiologist) interpreted the images as part of our normal

workflow. In all cases of disagreement between the two observers, a third opinion was sought from another radiologist. Preliminary reports were sent to the referring physician and the reports were then entered into the data collection form for the analysis of the study.

MRI Imaging Protocol

The MR imaging scans of patients referred with a clinical diagnosis of LBP were performed by two persons (a qualified technician and principal investigator). MR examination of the lumbar spine at presentation was performed with a 0.25 T (GE Medical Systems) or 0.30T (Siemens) MR imager using the spine phased array coils. The scans consisted of sagittal and axial T1-weighted (repetition time/echo time (TR/TE) of 400/8 ms) and T2-weighted (TR/TE of 3,000/120 ms) turbo spin echo and STIR images. Enhanced T1W images with Gadolinium penetrate dimeglumine were used in cases of infections and suspected neoplastic processes. A slice thickness of 4 mm was used for both sagittal and axial images. A field of view of 350mm and 200 mm for the sagittal and axial images, respectively; and a matrix of 192 by 256 were used. The images were collected as printed laser film hard copies and also electronically and stored directly as DICOM (Digital Imaging and Communications in Medicine) files on the MR workstation.

Data Management and Analysis

Completed standardized forms were checked for completeness and coded. The data were entered into a password protected computerized database. Data were analyzed using STATA version 10. Descriptive statistics were carried out for continuous variables using mean, median, standard deviation and inter-quartile range. While frequency listings were used for categorical variables. To assess whether there was any association between the outcome of interest and the social demographic characteristics the chi square test was used. In cases where the cell count in any of the cells was below 5 the Fishers' exact test was used to test for any associations. In all the analysis p-value less than 0.05 was considered statistically significant. Dissemination of the study findings will be through publications and conferences.

RESULTS

The Most Common MRI Pattern in Patients with Low Back Pain

The common lumbar spine degenerative findings in patients with low back pain were endplate (Nordic) changes 35 (19.2%), anterior osteophytes 48 (25.95%), facet joint arthrosis 17 (9.24%), ligamentum flavum hypertrophy 14 (7.57%) and spondylolisthesis 3 (1.63%) shown in Table 1 below. Lumbar disc degeneration (LDD) was common (80%) in LBP patients studied. Table 2 below illustrates that disc dehydration which is one of the earliest features of aging and disc

degeneration was present in 114 (61.62%) patients with the most dehydrated disc seen at L4/L5 89 (77.39%) followed by L5/S1 85 (73.91%).

Table 1: A table showing lumbar spine degenerative findings

Variable	Freq (%)
Lumbar Spine Degenerative Findings	N=185
Endplate (modic) changes	35 (19.02)
Anterior osteophytes	48 (25.95)
Facet joint arthrosis	17 (9.24)
Ligament flavum hypertrophy	14 (7.57)
Spondylolisthesis	3 (1.63)

Table 2: A table showing disc dehydration

Variable	Freq (%)
Type of LDD	N=185
Disc dehydration	114 (61.62)
Site of Lesion	N=115
L1-L2	10 (8.70)
L2-L3	26 (22.61)
L3-L4	33 (28.70)
L4-L5	89 (77.39)
L5-S1	85 (73.91)

The Common Disc Contour Abnormalities in Patients with Low Back Pain:

Patients with degenerative disc disease had the following disk contour abnormalities. Disc bulges 121 (65.41%) and herniations 43 (23.24%). Herniations were further reported as broad based herniations 27 (62.79%), extrusions 3 (6.98%) and the protrusions 13 (30.23%). The most common site for bulges and herniations was L4/L5 95 (78.51%) and 26 (60.47%) respectively. The most common complication of bulges and herniations was impingement of exiting nerve roots 48 (47.06%) and compression of exiting nerve roots and cauda equina 29 (70.73%) respectively as shown in Table 3 and 4 overleaf.

Lumbar Disc Degeneration

Bulges

Table 3: A table showing disc bulges

Variable	**Freq (%)**
Bulges	121(65.41)
Site of Lesion	N=121
L1-L2	1 (0.83)
L2-L3	16 (13.22)
L3-L4	31 (25.62)
L4-L5	95 (78.51)
L5-S1	80 (66.12)
Complications	N=102
Impingement of exiting nerve root	48 (47.06)
Impingement on nerves and cauda equina	5 (4.90)
Mild thecal sac indentation	14 (13.73)
Spinal canal stenosis	3 (2.94)
Compression of exiting nerve root	32 (31.37)

Herniations

Table 4: A Table showing Disc Herniations

Variable	Freq (%)
Type of Herniation	N=43
Broad based herniations	27 (62.79)
Extrusions	3 (6.98)
Protrusions	13 (30.23)
Site of Lesion	N=43
L1-L2	3 (6.98)
L2-L3	6 (13.95)
L3-L4	7 (16.28)
L4-L5	26 (60.47)
L5-S1	19 (44.19)
Complications	N=41
Impingement of exiting nerve root	6 (14.63)
Impingement on nerves and cauda equina	3 (7.32)
Mild thecal sac indentation	1 (2.44)
Spinal canal stenosis	2 (4.88)
Compression of exiting nerve root	29 (70.73)

Other MRI Patterns in Patients with Low Back Pain

Other less frequently encountered but still significant patterns include: lumbar spondylosis 47 (23.78%), infections 9 (4.86%), neoplasms 18 (9.73%) and other causes 29 (15.68%). Lumbar spondylosis was common at the L4/L5 and L5/S1 level at 35 (80.85%) respectively. The most common complication of lumbar spondylosis was spinal canal stenosis seen in 2 patients. The common lumbar spine infections were tuberculosis seen in 6 (66.67%) and pyogenic infections 3 (33.33%). The most common site was the mid lumbar vertebrae L3/L4 at 7 (77.78%) followed by the upper lumbar vertebrae L2/L3 6 (66.68%) and L1/l2 1 (11.11%). The most common complication of infections was spinal canal stenosis 2 (33.34%). Metastases were the most common lumbar spine neoplastic processes seen in fourteen patients. Suspected prostate cancer 5 (45.45%) was the most

common primary tumor sending metastasis to the spine in men. Primary tumors of the lumbar spine were rare and were seen in 4 patients. The most common primary tumor was hemangioma 3 (75%). The most common location for the neoplasms was in the vertebral body 16 (88.89%). Other anomalies encountered were normal MRI in fifteen cases, 2 cases with congenital anomalies, 2 cases with osteoporosis and 2 cases with T-spine tumors (Table 5 below, 6 and 7 overleaf).

Table 5: A Table showing Lumbar Spondylosis

Variable	Freq (%)
Lumbar Spondylosis	N=47
Site of Lesion	N=47
L1-L2	24 (51.06)
L2-L3	30 (63.83)
L3-L4	33 (70.21)
L4-L5	38 (80.85)
L5-S1	38 (80.85)
Complication	
Spinal canal stenosis	2

Table 6: A Table showing Lumbar Spine Infections

Variable	Freq (%)
Lumbar spine infections	N=9
TB	6 (66.67)
Pyogenic infections	3 (33.33)
Site of Lesion	N=9
L1-L2	1 (11.11)
L2-L3	6 (66.67)
L3-L4	7 (77.78)
L4-L5	3 (33.33)
L5-S1	3 (33.33)
Complication	N=6

Impingement of exiting nerve root	1 (16.67)
Impinging on exiting and cauda equina	1 (16.67)
Mild thecal sac indentation	1 (16.67)
Spinal canal stenosis	2 (33.34)
Soft tissue phlegmon	1 (16.67)

Table 7: A Table showing Lumbar Spine Neoplasms

Variable	**Freq (%)**
Location of neoplastic lesion	N=18
Extradural	2 (11.11)
Intradural extramedullary	0
Intramedullary	0
Vertebral body	16 (88.89)
Primary spinal tumour known	4
Type of tumour if known	N=4
Hemangioma	3 (75.00)
Multiple myeloma	1 (25.00)
Metastases present	14
Primary Tumour	N=14
Suspected prostate cancer	5 (45.45)
Hepatocellular carcinoma	1 (9.09)
Melanoma(foot)	1 (9.09)
Not known	4 (36.36)
Site of Lesion	N=18
L1-L2	9 (50.00)
L2-L3	7 (38.89)
L3-L4	9 (50.00)
L4-L5	9 (50.00)
L5-S1	6 (33.33)
Complication	N=7

Spinal canal stenosis	3 (42.86)
Compression of exiting nerve roots and cauda equina	4 (57.14)

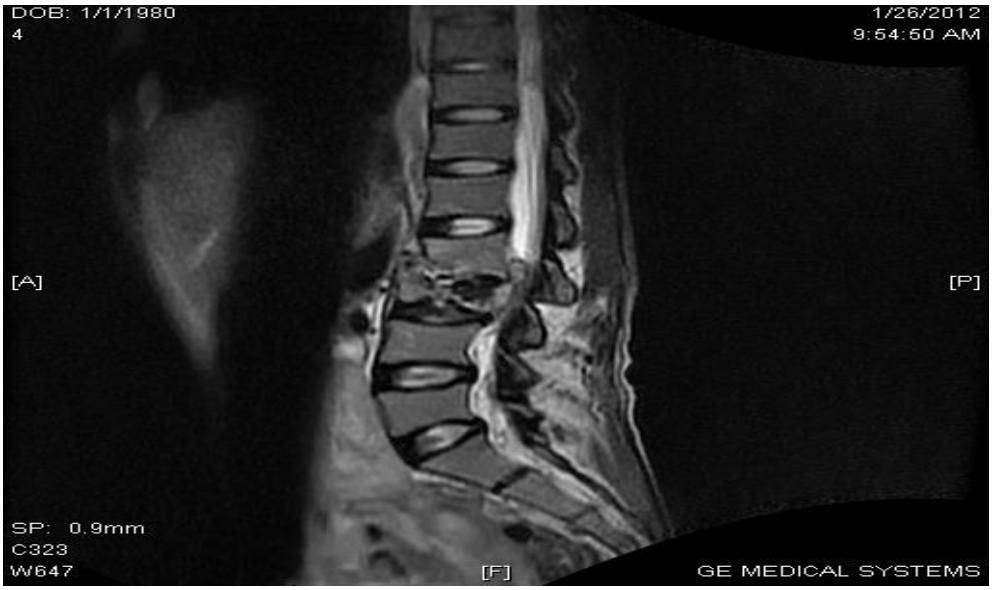

Figure 1: Tuberculosis of the spine in a 32 year old male

A sagittal T2W image showing destruction of L2 and L3 vertebral body with involvement of the L2-L3 intervertebral body.

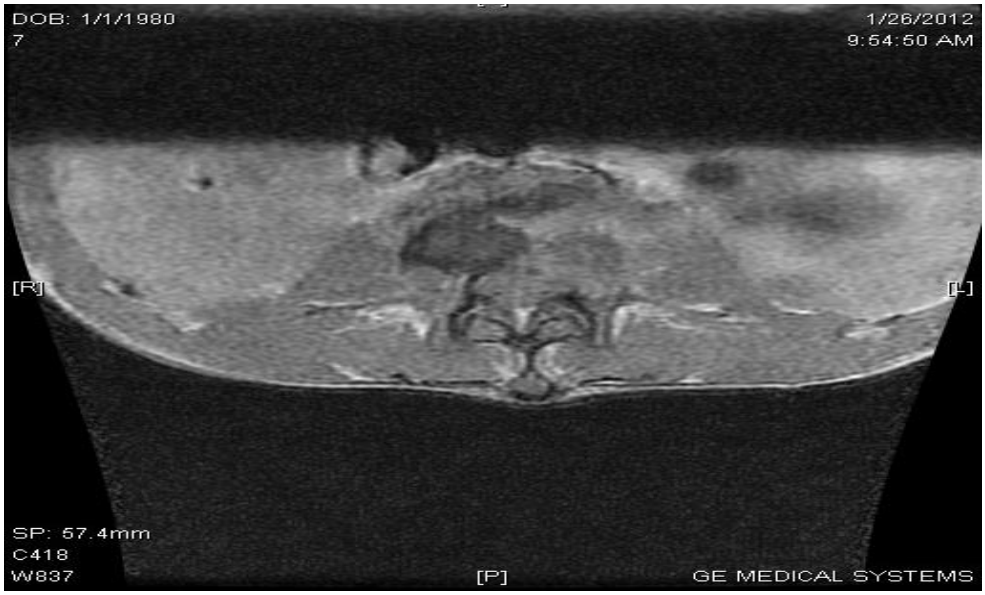

Figure 2: Images of the same patient in fig 14 above

An axial T1W+C image showing destruction of the L3 vertebral body with involvement of the pre and paravertebral soft tissues note the contrast enhancement due to inflammation.

Figure 3: Metastases in a 59 year old male with a history of prostatic cancer

A sagittal T2W image showing multiple hyperintense lesions at L1, L2, L3, L4 and L5 vertebrae note the destruction of the L1 vertebral body and relative preservation of all the intervertebral discs.

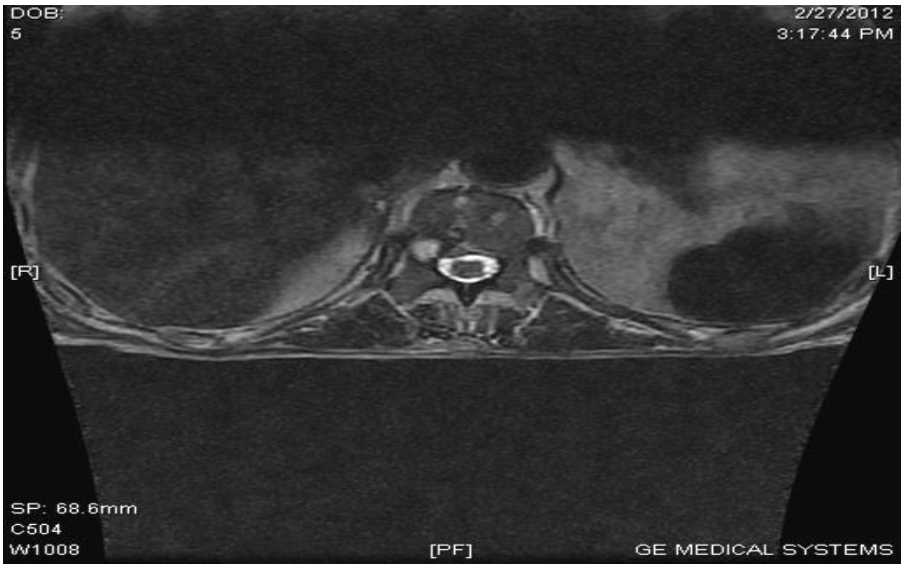

Figure 4: Images of the same patient in fig 16 above

An axial T2W image showing multiple hyperintense lesions at L2 vertebral body consistent with metastases.

DISCUSSION

MRI Patterns of Low Back Pain

The current study shows different MRI patterns of lumbar spine disease patients with LBP in Eldoret, Kenya. A review of 185 MRIs of patients presenting with LBP in this study established lumbar degenerative disc disease (80%) as the most common followed by lumbar spondylosis 23.78%. Other less frequently encountered but still significant patterns include: infections 4.86%, neoplasms 9.73% and other causes 15.68% (normal, congenital anomalies, osteoporosis and T-spine lesions). The common lumbar spine infections were tuberculosis seen in 66.67% and pyogenic infections 33.33%. Metastases were the most common lumbar spine neoplastic processes with suspected prostate cancer 45.45% as most common primary tumor sending metastasis to the spine. Primary tumors of the lumbar spine were rare with the most common primary tumor being a hemangioma 75%.

Other anomalies encountered were normal MRI in fifteen cases, 2 cases with congenital anomalies, 2 cases with osteoporosis and 2 cases with T- spine tumors. MRI patterns have been reported by McNally et al. in 1000 patients with non-traumatic LBP without radiculopathy.[21] The results of this study showed that malignancy, infection, osteoporotic vertebral fracture, spondylitis, pars defects and cord tumors were detected in 20%. This study detected neoplasms in 8% but excluded benign neoplasms like vertebral hemangiomas and did not focus on the individual prevalence of each disease pattern. Younis et al. A study of 170 patients in Lahore mainly yielded findings of degenerative disc disease with other abnormalities like infective, inflammatory, neoplastic or congenital anomalies of the spine being excluded.[22]

In India, Verma et al. A retrospective study of 232 patients found the incidence of lumbar disc degeneration to be more frequent at 79.3%.[23] This study likewise excluded spinal infections and tumors. In Cameroon Uduma et al. A study of 48 patients yielded 33.3% disc hernia, 37.5% spondylosis, 2.08% spondylodiscitis and one elderly patient 2.08% with a metastatic bony lesion.[24] This study was almost similar in trying to address the prevalence of different disease patterns although the findings differed greatly possibly due to the small number of patients. In Tanzania, Mboka et al. A study of 165 patients found 83% to have degenerative disc disease.[25] This study also excluded patients with inflammatory conditions, infections, and neoplasms. Most of the findings in all the studies mentioned focus only on degenerative disc disease excluding infections, neoplasms and congenital anomalies thus, it may not be appropriate to compare these results. This study serves to reinforce the fact that MRI has a high sensitivity for detection of infections and

neoplasm alongside lumbar spine degenerative disease.

The Most Common MRI Pattern in Patients with Low Back Pain

In the present study, the majority of patients with LBP had lumbar degenerative disc disease. In Malaysia, Yong et al. in their study concluded that the most frequent finding in 91.2% of patients with LBP was intervertebral disc degeneration. In Tanzania, a study by Mboka et al found 83% to have degenerative disc disease. In Hong Kong, Samartzis et al study yielded 72.7% with degenerative disc disease. A study by West et al. in Jamaica was dominated by degenerative disc disease in 78.2% subjects. These findings may be comparable to the findings in the current study. In Nigeria, a retrospective study by Irurhe et al. yielded 37% disc degeneration.[25-29] These results are much lower than the current study results (80%). These different global studies revealed a predominance of degenerative disc disease in both developed and developing countries. This is a fact reinforced in our study even though studies have found 35% of asymptomatic individuals to have degenerative disc disease.[37]

The Common Disc Contour Abnormalities in Patients with Low Back Pain

Different disc contour abnormalities result from lumbar disc degeneration. Many physicians refer to any or all disc abnormalities as herniated or prolapsed disk which may not put the abnormality seen on the imaging study in proper perspective and may be misleading. In the study, disc morphology was assessed and graded using a published classification scheme of "normal, bulge and herniation; broad based protrusion, focal protrusion and extrusion.[30, 31] The findings reported 65.41% disc bulges and 23.24% herniations. Herniations were further reported as 62.79% broad based herniations, 6.98% extrusions and 30.23% protrusions. There was a substantial difference between the disc contour abnormalities reported and those reported in other studies. Ongeti et al. reported only prolapsed intervertebral discs in Kenya.[38] Bilutshas reported on 70.1% disc prolapsed, further classifying them into 18.5% bulges.[34] This study had less bulges than our study. Yong et al. in Malaysia reported 40.4% bulges, 50% protrusions and 19.4% extrusions.[26]

The study reported less bulges and more protrusions and extrusions than our study. Verma et al. in India reported 92% bulges, 74% protrusion and 28% extrusion.[23] This particular study had more bulges, protrusions and extrusions than our study. Mboka et al. in Tanzania reported 39% bulges, 63% herniations, 98% protrusion and 2% extrusion.[25] This Tanzanian study reported less bulges and extrusions at the same time having a high number of protrusions and herniations. In Nigeria a study by Irurhe et al. reported 3.5%

bulges, 59.7% multiple disc herniation, 44.7% protrusions and extrusions 24.7%.[29] This study reported less bulges, protrusions, extrusions and more herniations than our study. Younis in Lahore reported bulges 78% and herniations 25%.[22] This particular study reported more bulges than herniations which were findings similar to our study. From these findings, bulges, herniations, protrusions and extrusions are common in patients with chronic LBP. Radiologists and spine surgeons need to use similar terminology so as to be able to determine clinically significant lesions.

The Most Common Site of Lumbar Disc Degeneration in Patients with Low Back Pain

Traditionally, disc degeneration is common in the areas with the heaviest mechanical stresses such as the lower lumbar region. A fact verified in this study, where the findings reported that the majority of the participants, who had bulges (78.51%) and herniations (60.47%), had lesions commonly appearing at L4/L5. On the other hand, lesions at L5/S1 were seen in 66.12% and 44.19% patients with bulges and herniations respectively. These findings are comparable but with a higher incidence than those found in other African studies where L4/L5 lesions were the commonest at 42.3%, 54.5% and 42% respectively. These were then followed by L5/S1 lesions at 25.5% and 25% respectively.[25, 34, 38]

The Common Complications of Lumbar Disc Degeneration

Individuals with lumbar disc degeneration (LDD) are predisposed to the development of common potential complications such as neural compression, chemical irritation of nerves, osseous abnormalities, segmental instability, spinal stenosis and pain.[27] In the study, the most common complication of bulges and herniations were reported as an impingement of exiting nerve roots (47.06%) and compression of exiting nerve roots and cauda equine nerve roots (70.73%) respectively. Yong et al. reported 42.1% which was slightly lower, whereas Mboka et al reported 77% nerve root compression which was comparable to the findings in this study.[25, 26]

CONCLUSION AND RECOMMENDATIONS

Lumbar disc degeneration (LDD) is the commonest MRI pattern in patients with low back pain in Eldoret, Kenya. Disc desiccation is common patients with low back pain.

We hope that with the aid of diagnostic imaging modalities such as MRI the primary care physicians will be able to make a more directed referral to an appropriate specialist for timely intervention. This will improve the quality of health care services and management of the patient.

MRI should be done in patients with LBP. This routinely done on patients with suspected

complicated LBP in developed countries and the practice should also follow suit in our setup.

MRI axial images should be obtained in a contiguous manner to avoid skip areas which may miss free disc fragments and result in failure of back surgery.

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