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Original Research Article

Characteristics of lumbar canal stenosis patient at Koja district hospital year 2011-2021

Muhammad Iqbal Nurfadhilah*, Heka Priyamurti, Arsanto Tri Widodo

Department of Orthopedic and Traumatology, Koja Distric Hospital, Koja, Tanjung Priok, DKI Jakarta, Indonesia

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***Correspondence:**
Dr. Muhammad Iqbal Nurfadhilah,
E-mail: nurfadhilah32@gmail.com

ABSTRACT

Background: Since there are too many cases of lumbar canal stenosis in Indonesia. The aim of the study was to discover all the factors that influence the incidence of lumbar canal stenosis.
Methods: This study used all cases of lumbar canal stenosis in Koja District Hospital in Jakarta from 2011 to 2021. This was a medical record-based retrospective study in which files of patients with the diagnosis of lumbar canal stenosis were reviewed. A descriptive analytic test was used to analyze results was presented in the form of a table.
Results: There were 48 lumbar canal stenosis cases in male patients out of 66 total patients. Incidents of lumbar canal stenosis occurred more frequently in anatomical locations L4-5 than in other locations. There were 48 lumbar canal stenosis cases with anatomical locations L4-5 in 50 patients from 66 patients. Incidents of lumbar canal stenosis occur in people with obesity more frequently than in people without obesity. There were 48 lumbar canal stenosis cases in people with obesity patients out of 66 total patients. The incidence of lumbar canal stenosis with a moderate VAS score was greater than that with a mild or severe VAS score. There were 48 lumbar canal stenosis patients with a moderate vas score out of 66 patients. There were 59 lumbar canal stenosis patients who got surgery out of 66 patients, and 7 of them had no surgery. Lumbar canal stenosis more frequently occurred in men than women, with more frequent anatomical lesions in L4-L5, and more frequently in people with obesity than in people without obesity. Most of them had a moderate VAS score and got surgery.
Conclusions: According to this study, males had more lumbar canal stenosis incidents than females.

Keywords: Surgery, Lumbar canal stenosis, Koja district hospital

INTRODUCTION

Lumbar spinal stenosis (LSS) is defined as a syndrome in which narrowing of the spinal canal and intervertebral foramen, which are nerve routes related to degeneration of the lumbar intervertebral disks and/or joints, causes specific symptoms of the lumbar region and lower limbs.[1-3] Patients with this disease complain of numbness and pain in the lumbar and gluteal regions, and intermittent claudication leads to gait disorder in some cases.[2] Although stenosis of the spinal canal is associated with organic abnormalities such as spondylolysis and spondylolisthesis in some patients, aging-related degeneration of the vertebral bodies and/or intervertebral disks may be etiologically involved in most patients.[2] Therefore, this disease has been regarded as common in elderly subjects.

Lumbar spinal degeneration that leads to lumbar canal stenosis is a disabling clinical condition. Decompression for lumbar canal stenosis is widely used and accepted and is considered to be a gold standard treatment. Although minimally invasive techniques are currently becoming popular, the basic concept that involves decompression of the neural structures has remained the basis of surgical treatment. The treatment protocol has been based on the traditionally agreed-upon and more than a century old concept that disc degeneration and disc space reduction are

the core pathogenetic issues for the ultimate development of spinal canal stenosis. Osteophyte formation and ligamentum flavum buckling lead to compromise of the spinal canal and compression of the traversing nerve roots of the cauda equina.

Lumbar canal stenosis can be defined as an anatomical or functional narrowing of the osteoligamentus vertebral canal and/or the intervertebral foramina causing direct compression or indirect compromise of the dural sac, the caudal nerve roots and their vasculature enough to cause symptoms or signs.[4] During flexion, the laminae of the two adjacent vertebrae move apart and interlaminar space widens, producing lengthening and thinning of the ligamentum flavum. Dynamic changes in the lateral recess are less marked than in the central portion of the central canal.[5] They are caused by bulging of the posterolateral annulus, with or without disc, into the subarticular portion of the lateral recess. Rotational forces affect the subarticular portion of the lateral recess. Most of the patients are comfortable while they are lying down and have stenotic symptoms precipitated by dynamically loading the spine during standing, walking, etc. There are two common types of clinical presentation of stenotic symptoms on loading. The first group of patients has well-localized radicular symptoms and signs, often involving a single root, and their symptoms are produced almost immediately or within a few minutes of spinal loading. The other group of patients complains of ill localized symptoms, which are produced after prolonged walking or standing.[6]

The degenerative process involving the disc begins as early as the late teens or early twenties. Initially, an increase in the water content of the nucleus pulpose predisposes it to generalized bulges or focal herniation through the cartilaginous endplates of the adjacent vertebra (Schmorl's node).[7] With time, the nucleus pulposus undergoes progressive dehydration, which results in a loss of height in the disc space. With further loss of water and proteoglycans, the disc becomes brittle and fibrotic and is unable to provide the necessary elasticity for proper support of the vertebral column, a process known as disc desiccation.[7]

The overall prevalence of lumbar canal stenosis (LCS) is 29%, and it is 47% in individuals 60 years of age. The disease manifests as neurogenic claudication, causing numbness and weakness in the legs and a reduced ability to walk for an extended length of time. Leg pain due to foraminal stenosis and facet arthropathy may accompany claudication.[8] Back pain may or may not be present. LCS primarily results from degenerating spinal structures that narrow the spinal canal and cause epidural venous congestion, leading to compression of the dural sac and the enclosed nerve roots.

According to its anatomical location, LCS is classified as either central, lateral, or combined stenosis.[9] As risk factors associated with LSS, aging, gender, and body mass index (BMI) have been reported.[10] The objective of this study was to clarify the prevalence of lumbar canal stenosis associated with lower-limb symptoms, estimate the prevalence of lumbar canal stenosis, and investigate factors associated with lumbar canal stenosis using a cross-sectional survey involving a representative sample selected from Koja District Hospital patients.

METHODS

The present study was a medical record-based retrospective study in which files of patients with a diagnosis of lumbar canal stenosis were reviewed. This study used all cases of lumbar canal stenosis located and registered at the Koja District Hospital for a period of 10 years from 2011 to 2021. This study was conducted from 03 January 2022 to 10 January 2022. The inclusion criteria set by the researcher were canal stenosis patients at Koja District Hospital. Meanwhile, the exclusion criteria were: canal stenosis with infection, spondylitis, spondylolisthesis, and patients aged 35-60 years. The study population consisted of 80 patients. Then, the study involved 66 patients as samples were taken using a purposive sampling technique. Every patient involved in the research sample has given approval to provide medical data that will be used as supporting data for this study.

This study included all cases of lumbar canal stenosis, which were then divided by gender, anatomical location of lumbar stenosis, BMI, and VAS value. It was intended to determine the factors that can influence the occurrence of lumbar canal stenosis. The data were analyzed using descriptive analysis, a statistical analysis method that aims to provide a description of the research subject based on variable data obtained from certain subject groups. The descriptive analysis of this research was presented in the form of a table.

Ethical approval

This study has obtained hospital and patient consent.

RESULTS

Figure 1 shows that incidents of lumbar canal stenosis in males occur more frequently than in females. There were 48 lumbar canal stenosis male patients out of 66 patients. Figure 2 shows that incidents of lumbar canal stenosis occur in anatomical locations L4-5 more frequently than in other locations. There were 50 cases of lumbar canal stenosis with anatomical locations L4-5 out of 66 patients.

Figure 3 shows that the incident of lumbar canal stenosis with a moderate VAS score is greater than a mild or severe VAS score. There were 48 lumbar canal stenosis patients with a moderate vas score out of 66 patients.

Figure 4 shows that there were 59 lumbar canal stenosis patients among whom 66 had surgery, and 7 of them were without surgery.

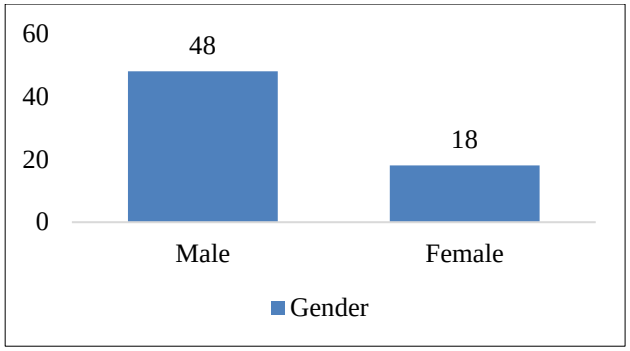

Figure 1: Incident of lumbar canal stenosis by gender.

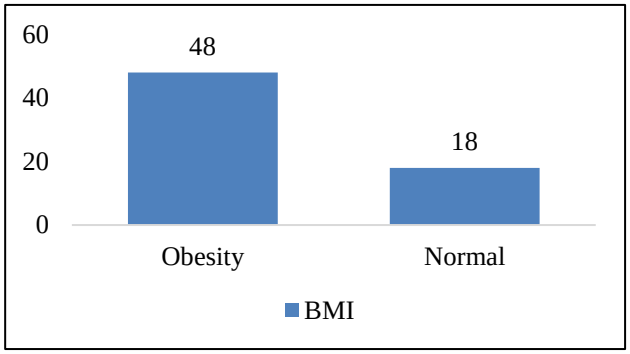

Figure 2: Incident of lumbar canal stenosis with obesity.

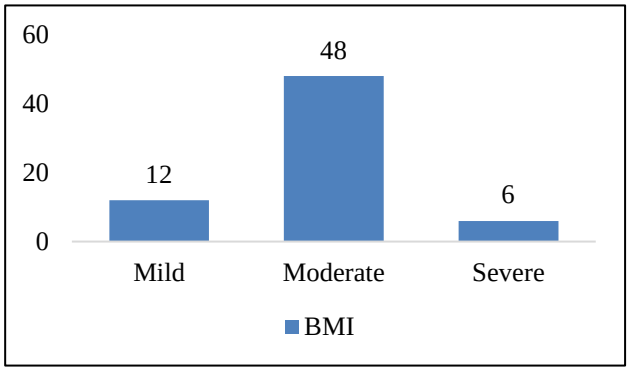

Figure 3: Incident of lumbar canal stenosis with VAS score.

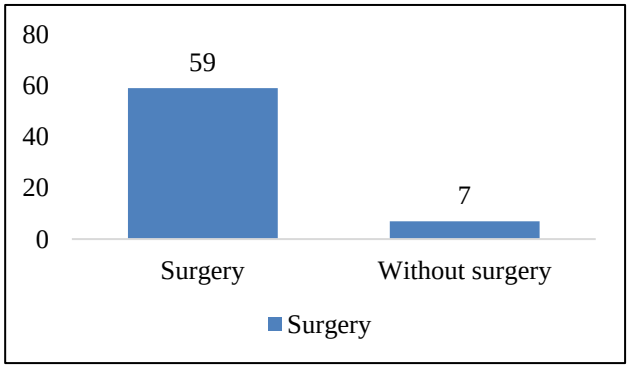

Figure 4: Lumbar canal stenosis patients whom surgery.

DISCUSSION

Based on the results of research, all cases of lumbar canal stenosis in Koja District Hospital from 2011 to 2021 showed that, based on gender, lumbar canal stenosis occurred more in male patients than females. Ishimoto et al agreed that the prevalence of both genders increased until reaching the 60-69 years old age group, in which the prevalence of men was higher than that of women.[11] However, the prevalence for women was higher than that of men after age 70. This study showed that, based on anatomical locations, lumbar canal stenosis at L4-L5 occurred more frequently than at other locations. Disk herniation was most common at the L4-5 and L5-S1 levels. A herniated disk at L5-S1 can lead to plantarflexion weakness, decreased sensation in the lateral foot, and cause pain in the posterior leg. A disk herniation at L4-5 can lead to a foot drop and numbness in the large toe web and dorsal aspect of the foot. Lastly, an L3-4 disk herniation can lead to knee extension weakness, numbness in the medial foot, and pain in the anterior thigh.[12]

This study also found that lumbar canal stenosis is more common in people with obesity than in people without obesity. Knutsson et al agreed that higher BMI increases the risk of clinical LSS, with similar estimates in both males and females.[13] Obesity and being overweight are associated with an increased risk of developing LCS. Obesity is one plausible explanation for the increased number of patients with clinical LCS. Whether weight loss reduces symptoms and progression of LSS remains to be established.[13] This study also showed that most of them had a moderate VAS score. The Visual analogue scale (VAS) and the Oswestry disability index (ODI) have been validated to measure the health-related quality of life outcomes. VAS evaluates the severity of pain while ODI evaluates a patient's functional disability. Duration of symptoms is an unspecific measure of the chronicity of the disease condition.[14]

Based on the researchers' direct experience in the research process, some limitations can be an important factor for other researchers to further refine their research. These limitations included the number of respondents who were still insufficient to describe the actual situation. The subject of the study was only focused on the department of orthopedics and traumatology of Koja District Hospital, which was not broad in scope, so that data acquisition might not be optimal.

CONCLUSION

Lumbar canal stenosis patients at Koja District Hospital were more likely to be men than women, had anatomical lesions in L4-L5, and were more likely to be obese than not obese. Most of them had a moderate VAS score and got surgery.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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