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Prevalence of symptomatic lumbar spinal stenosis and its association with physical performance in a population-based cohort in Japan: the Wakayama Spine Study

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SUMMARY

Objective: The purpose of this study was to investigate the prevalence of symptomatic lumbar spinal stenosis (LSS) and to clarify the association between symptomatic LSS and physical performance using magnetic resonance imaging (MRI) in a population-based cohort.
Design: This cross-sectional study was performed as a part of the Research on Osteoarthritis/osteoporosis Against Disability (ROAD) in Japan and 1,009 subjects (335 men, 674 women, mean age 66.3 years, age range 21–97 years) were analyzed. An experienced orthopedic surgeon obtained the medical history and performed the physical testing for all participants. Symptomatic LSS diagnostic criteria required the presence of both symptoms and radiographic LSS findings. A 6-m walking time, chair standing time, and one-leg standing time were obtained from all participants.
Results: The prevalence of symptomatic LSS was 9.3% (95% confidence interval [CI]: 7.7–11.3) overall, 10.1% (CI: 7.4–13.8) in men and 8.9% (CI: 7.0–11.3) in women. There was a difference in the prevalence with increasing age by gender. The LSS prevalence showed little difference with age greater than 70 years for men, but the LSS prevalence for women was higher with increasing age. Among physical performance measures, 6-m walking time at a maximal pace was significantly associated with symptomatic LSS ($P = 0.03$).
Conclusion: The prevalence of symptomatic LSS was approximately 10% in a cohort resembling the general Japanese population. A 6-m walking time at a maximal pace was a more sensitive index than walking at a usual pace in assessing decreased physical performance associated with symptomatic LSS.

Introduction

Symptomatic lumbar spinal stenosis (LSS) is usually associated with impaired walking and other disabilities in the elderly. Symptomatic LSS has been shown to be the most frequent indication for spinal surgery in patients more than 65 years old[1,2]. However, little is known about the prevalence of symptomatic LSS in the general population. This is because the subjects in previous symptomatic LSS studies were limited to patients who visited the hospital[3,4]. Hence, people with minor symptomatic LSS who did not visit the hospital were not included in those studies. Furthermore, an examination that can capture minute changes of the intervertebral discs and ligaments using a tool like magnetic resonance imaging (MRI) is essential for the diagnosis of symptomatic LSS. This is because the definition of stenosis includes a morphological element. Many previous studies have reported the utility of MRI[5,6], but, to our knowledge, there have been no population-based cohort studies of symptomatic LSS using MRI.

It is well-known that the principal symptoms for LSS are sciatica and intermittent claudication (IC)[1,2]. Although most patients with MRI evidence of radiographic LSS are asymptomatic[7,8], when symptoms are present, severe symptoms are probably associated with poor physical performance. There have been few reports concerning physical performance of patients with symptomatic LSS[9,10]. According to a previous report concerning walking ability of

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subjects with three different degenerative musculoskeletal disorders (knee osteoarthritis, hip osteoarthritis, and symptomatic LSS) who were scheduled for either joint replacement or spinal decompression surgery, walking ability was limited in all three groups compared to healthy controls[9]. However, patients with symptomatic LSS showed the greatest restrictions in walking ability. In another report regarding subjects with symptomatic LSS in an orthopedic clinical practice, subjects in the healthy group showed greater functional mobility than those in the symptomatic LSS group[10]. The subjects included in the previous studies had enough symptoms to have visited the hospital, however, the association of physical performance measures with symptomatic LSS in subjects with minor symptoms who do not visit the hospital has not been well characterized. Although there may be a latent diminished physical functioning in symptomatic LSS with even minor radiographic changes and symptoms, there have been no population-based studies on symptomatic LSS that have included people with minor signs and symptoms of LSS.

Symptomatic LSS in this study was diagnosed by the presence of both clinical symptoms and radiographic LSS findings consistent with the clinical presentation. The aim of the present study was to clarify the prevalence of symptomatic LSS by gender and age strata using a population-based cohort. In addition, the association of symptomatic LSS with physical performance measures (walking speed, chair standing time, and one-leg standing time) was evaluated.

Methods

Participants

The present study, entitled "the Wakayama Spine Study: population-based cohort", was a population-based study for degenerative spinal disease and performed in a subcohort of the large-scale population-based cohort study called Research on Osteoarthritis/osteoporosis Against Disability (ROAD). ROAD is a nationwide, prospective study of bone and joint diseases consisting of population-based cohorts established in several communities in Japan. As a detailed profile of the ROAD study has already been described elsewhere, only a brief summary is provided here[11–14]. To date, creation of a baseline database including clinical and genetic information for 3,040 inhabitants (1,061 men, 1,979 women) in the age range of 23–95 years (mean, 70.6 years) has been completed. Participants were recruited from listings of resident registrations in three communities: an urban region in Itabashi, Tokyo; a mountainous region in Hidakagawa, Wakayama; and a coastal region in Taiji, Wakayama. All participants provided written informed consent, and the study was conducted with the approval of ethical committees of the University of Tokyo and the Tokyo Metropolitan Institute of Gerontology. Participants completed an interviewer-administered questionnaire of 400 items that included lifestyle information, underwent anthropometric measurements, and physical performance measures were recorded. A second visit of the ROAD study to the mountainous region of Hidakagawa and the seacoast region of Taiji was performed between 2008 and 2010. From inhabitants participating in the second visit of the ROAD study, 1,063 volunteers were recruited to undergo MRI examinations. Fifty-two of the 1,063 volunteers declined the MRI examination, therefore, 1,011 were registered in the present study. All participants provided another written informed consent for the MRI examination. Among those 1,011 participants, two participants with LSS symptoms for whom MRI was contraindicated (due to presence of a pacemaker) were excluded, because a final diagnosis of symptomatic LSS could not be made (Fig. 1). Thus, 1,009 participants (335 men and 674 women, mean age 66.3 years, age range of 21–97 years) were analyzed in the present study. Similar to the baseline study, participants in the second visit of the ROAD study completed an interviewer-administered questionnaire of 400 items that included lifestyle information such as smoking habits, alcohol consumption, family history, past history, physical activity, reproductive variables, and health-related quality of life (QOL). Anthropometric measurements included height, weight, bilateral grip strength, and body mass index (BMI) (weight [kg]/height^2 [m^2]). The ankle-brachial index (ABI) was measured using PWV/ABI (OMRON Co., Kyoto, Japan) for all participants. A timed 6-m walk at the participant's usual pace in a hallway was recorded to measure physical performance. Similarly, 6-m walking time at a maximal pace was measured[15–18]. The time taken for five consecutive chair rises without the use of hands was also recorded[18–20]. One-leg standing time with each leg was measured using a stopwatch (upper limit, 60 s) and the time adopted was the mean value of both legs[21,22].

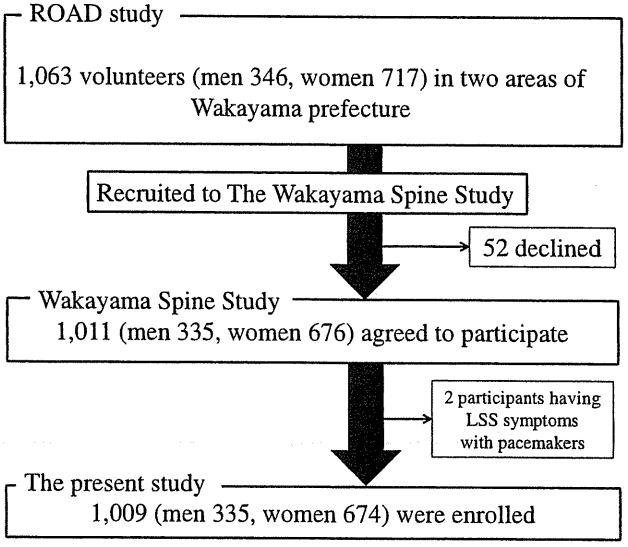

Fig. 1. Flow diagram depicting participants recruited to the Wakayama Spine Study from the ROAD study.

MRI

A mobile MRI (Excelart 1.5 T, Toshiba, Tokyo, Japan) unit was used in the present study, and total spinal MRI was performed for all participants on the same day as the examination. MRI exclusion criteria included presence of a cardiac pacemaker, claustrophobia, or other contraindications. The participants were positioned in supine during the MRI, and those with rounded backs used triangular pillows under their head and knees. The imaging protocol included sagittal T2-weighted fast spin echo (FSE) (repetition time (TR): 4,000 ms/echo, echo time (TE): 120 ms, field of view (FOV): 300 × 320 mm), and axial T2-weighted FSE (TR: 4,000 ms/echo, TE: 120 ms, FOV: 180 × 180 mm). Sagittal images were taken for the entire spine, but axial images were done at each lumbar intervertebral level (L1/2–L5/S1) parallel to the vertebral endplates.

Symptomatic LSS diagnosis

An experienced orthopedic surgeon (YI) consistently took the medical history and performed the physical testing for all the participants in this study. The history included information on the

presence of low back, buttock and leg pain, the area of pain or other discomfort, the presence of IC and its distance, and a modified Zurich Claudication Questionnaire[23] (excepting six items about satisfaction and a history of lumbar surgery for symptomatic LSS). Physical examinations included symptoms induced by lumbar extension, symptoms improved or induced with lumbar flexion, floor finger distance (cm), peripheral circulation (good or poor), a straight leg raising test, manual muscle testing of both upper and lower extremities, tendon reflex testing for both upper and lower extremities, and Babinski reflex testing. In addition, the MRI study of the entire spine was performed on all participants on the same day as the physical examination.

The diagnostic criteria for symptomatic LSS used in the present study were based on the LSS definition from the North American Spine Society (NASS) guideline, which requires presentation of both LSS symptoms and radiographic signs of LSS[24]. The orthopedic surgeon (YI) made the diagnosis of symptomatic LSS using this definition. The diagnosis for LSS symptoms required one or more of the following symptoms: pain, numbness and neurological deficits in the lower extremities and buttocks, and bladder/bowel dysfunction. The symptom characteristics should be induced or exacerbated with walking or prolonged standing and relieved with lumbar flexion, sitting and recumbency. The severity of radiographic LSS was assessed by qualitative measurements, which were performed by a well-experienced orthopedic surgeon (YI) and images were provided on films. The features assessed for LSS included severity of central, lateral recess, and foraminal stenosis, rated as four grades: none, mild, moderate and severe. The lateral recess was defined, as per Fardon and Millette[25], as extending from the medial edge of the facet to the edge of the neural foramen. We applied the general guideline classification of a[26] mild stenosis as narrowing of the normal area by one-third or less, moderate stenosis as narrowing between one-third and two-thirds, and severe stenosis as narrowing of more than two-thirds. Central and lateral recess stenosis was rated on the axial images and foraminal stenosis on the sagittal images. We used the most severe side for the rating of lateral and foraminal stenosis at each level. The same observer scored 50 randomly selected lumbar MRI films more than 1 month after the first reading to evaluate the intraobserver variability of the severity rating. Two experienced orthopedic surgeons also scored 50 different lumbar MRI films (YI & KN) for interobserver variability. The intraobserver variability was confirmed by a kappa analysis which dichotomized radiographic LSS severity as no/mild stenosis vs moderate/severe stenosis, and showed sufficient reliability for assessment of central, lateral and foraminal stenosis (0.77, 0.70 and 0.65, respectively). Interobserver variability was also sufficient for assessment using the kappa analysis (0.71, 0.65 and 0.65, respectively).

Radiographic LSS also required the severity to be more than moderate and the radiographic finding needs to be consistent with the symptoms as outlined above. An experienced orthopedic surgeon (YI) made the final diagnosis of symptomatic LSS using this definition, which requires presentation of both LSS symptoms and radiographic LSS findings. There were no participants with LSS symptoms due to tumor, inflammatory, or traumatic pathologies.

Statistical analysis

All statistical analyses were performed using JMP version 8 (SAS Institute Japan, Tokyo, Japan). Differences in age, height, weight, BMI, 6-m walking time at a usual pace, 6-m walking time at a maximal pace, chair standing time, and one-leg standing time between men and women were examined by the non-paired Student's *t*-test. The non-paired Student's *t*-test was also used to compare age between participants with and without symptomatic LSS. The prevalence of symptomatic LSS was also compared between men and women by the chi-square test. Differences in physical performance measures (6-m walking time at a usual pace, 6-m walking time at a maximal pace, chair standing time, and one-leg standing time) between participants with and without symptomatic LSS were examined by the non-paired Student's *t*-test. Furthermore, logistic regression analysis was used to estimate the odds ratios (ORs) of physical performance measures (6-m walking time at a usual pace, 6-m walking time at a maximal pace, chair standing time, and one-leg standing time) for symptomatic LSS after adjustment for age, gender and BMI.

Results

Table I shows the characteristics of 1,009 participants (335 men and 674 women, mean age 66.3 years, age range of 21–97 years) including age, anthropometric measurements, and physical performance in the present study. Two-thirds of the 1,009 participants were women. Mean age was not significantly different between men and women. BMI was significantly lower in women than in men ($P = 0.005$). Physical performance measures of the 6-m walking time at a usual pace and at a maximal pace were significantly shorter in men than in women ($P < 0.05$ for both), while chair standing time and one-leg standing time were not significantly different between men and women.

The prevalence of radiographic LSS findings was much greater than the prevalence of symptomatic LSS for the participants in this study. The percentage of participants with moderate or severe radiographic central stenosis was 76.5% (95% confidence interval [CI]: 73.7–79.0) in total, while the prevalence of symptomatic LSS was 9.3% (95% CI: 7.7–11.3) in total, 10.1% (CI: 7.4–13.8) in men, and 8.9% (CI: 7.0–11.3) in women. There was no significant difference between men and women ($P = 0.52$). The prevalence in men less than 39 years, 40–49, 50–59, 60–69, 70–79, and 80 years and older was 0%, 3.8% (CI: 0.7–18.9), 9.8% (CI: 4.6–19.8), 11.8% (CI: 6.1–21.5), 11.7% (CI: 6.7–19.8), and 10.7% (CI: 5.6–19.7), respectively, while that in women was 0%, 1.4% (CI: 0.2–7.3), 5.7% (CI: 2.8–11.3), 9.3% (5.7–14.8), 11.9% (CI: 7.9–17.5), and 13.3% (CI: 8.4–20.6), respectively (Fig. 2). The prevalence of both genders

Table I
Characteristics of participants

	Total	Men	Women	*P* value for gender
No. of participants	1009	335	674	
Age group (years)				
≦39	30	11	19	–
40–49	100	26	74	–
50–59	184	61	123	–
60–69	229	68	161	–
70–79	271	94	177	–
≧80	195	75	120	–
Demographic characteristics				
Age, years	66.3 ± 13.6	67.3 ± 13.8	65.9 ± 13.4	0.11
Height, cm	155.9 ± 9.4	164.5 ± 7.1	151.6 ± 7.2	<0.0001
Weight, kg	56.8 ± 11.5	64.4 ± 11.7	53.1 ± 9.4	<0.0001
BMI, kg/m^2	23.3 ± 3.6	23.7 ± 3.5	23.1 ± 3.6	0.005
Physical performance				
Six-meter walking time at a usual pace, s	5.7 ± 2.2	5.5 ± 1.5	5.8 ± 2.4	0.04
Six-meter walking time at a maximal pace, s	3.9 ± 1.4	3.6 ± 1.1	4.0 ± 1.6	<0.0001
Chair standing time, s	8.9 ± 4.0	8.8 ± 3.4	8.9 ± 4.2	0.61
One-leg standing time, s	36.0 ± 23.7	35.7 ± 24.0	36.1 ± 23.6	0.82

Non-paired *t*-test was used to determine differences in demographic characteristics and measurements of physical performance between men and women. Values are the means ± standard deviation.

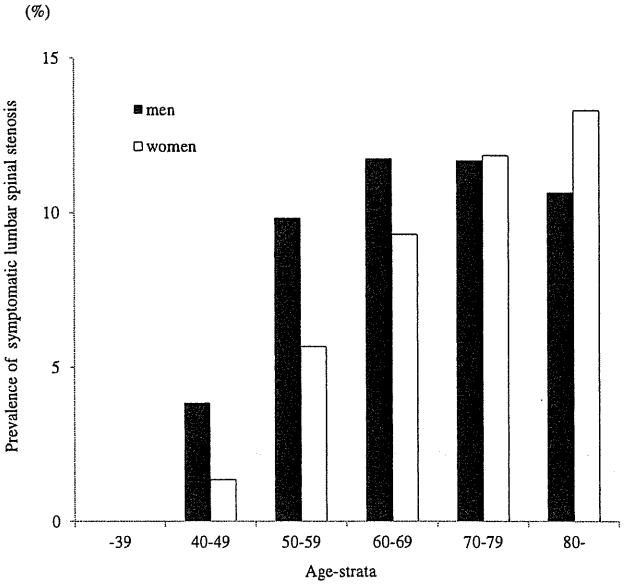

Fig. 2. Prevalence of symptomatic LSS classified by age and gender among 1,009 participants from a community cohort in Japan.

increased until reaching the 60–69 year old age group in which the prevalence in men was higher than that of women. However, the prevalence for women was higher than that of men after age 70. The prevalence of symptomatic LSS in men demonstrated little difference between age groups 60–69 years to over 80 years, but the prevalence for women became significantly higher with increasing aging ($P = 0.036$).

Fifty-five (58.5%) of 94 participants defined as having symptomatic LSS had IC. Five of these 55 participants presented with an ABI < 0.9. However, these five participants also had symptomatic LSS and their leg symptoms were positionally dependent. In this study, there were fifty neurogenic IC cases. There were five cases of unspecified IC, which was caused by both neurogenic and vascular claudication.

Table II shows the physical performance measures in participants with and without symptomatic LSS. In the overall population, 6-m walking time at a usual pace, 6-m walking time at a maximal pace, chair standing time, and one-leg standing time were significantly worse in participants with symptomatic LSS than those without symptomatic LSS ($P < 0.01$ for all). When analyzed in men and women separately, the results were similar to those overall, although the significant differences disappeared in some physical performance measures in men. The significant differences of 6-m walking time at a usual pace in both genders and one-leg standing time in men disappeared after a Bonferroni adjustment. Logistic regression analysis after adjustment for age, gender and BMI showed that 6-m walking time at a maximal pace was significantly associated with symptomatic LSS (OR: 1.17, 95% CI: 1.01–1.34). The physical performance measures of 6-m walking time at a usual pace, chair standing time, and one-leg standing time were not significantly associated with symptomatic LSS (OR: 1.04, 95% CI: 0.94–1.13, OR: 1.03, 95% CI: 0.97–1.09 and OR: 1.00, 95% CI: 0.98–1.01, respectively).

Discussion

The present study is the first to clarify the prevalence of symptomatic LSS by gender and age strata and the association of symptomatic LSS with physical performance measures using a population-based cohort. The prevalence of symptomatic LSS was found to be 9.3% in the general Japanese population, 10.1% in men, 8.9% in women, and there were no significant differences between genders. Interestingly, although the prevalence in women was higher with increasing age, the prevalence in men was the highest at 60–69 years, and little difference in prevalence was seen in men aged 60–69 years to 80 years or older. The prevalence of radiographic LSS was much greater than the prevalence of symptomatic LSS, with only a small proportion of participants with radiographic LSS actually showing symptoms suggestive of the clinical syndrome. The 6-m walking time at a maximal pace was significantly associated with symptomatic LSS, while the 6-m walking time at a usual pace was not.

We have identified no previous studies of symptomatic LSS prevalence. Johnsson[4] reported that the incidence of symptomatic LSS was 50/million person-years in southern Sweden in a study of patients who consulted the orthopedic department in two cities. However, as the author of that report described, the incidence of symptomatic LSS could be underestimated, because the studies did not include patients with minor symptoms who did not visit the hospital. This study is the first to clarify the prevalence of symptomatic LSS using a population-based cohort study.

Reported differences in prevalence of symptomatic LSS between men and women are mixed[27–29]. Verbiest reported a preponderance of symptomatic LSS in men as compared to women among his patients diagnosed by clinical symptoms and myelography[28]. However, Getty reported an equal gender distribution of symptomatic LSS prevalence in a series in which subjects were treated surgically for symptomatic LSS[29]. It is important to note that the subjects in those studies were patients who visited hospitals. In the present study, differences in the prevalence of symptomatic LSS between men and women in the general population were clarified. The prevalence of symptomatic LSS in men was slightly higher than in women, but there was no significant difference between genders. There was a difference in distribution of symptomatic LSS between men and women. The prevalence in women was higher with increasing age, but that in men was the highest at 60–69 years and

Table II
Measurements of each physical performance in participants with and without symptomatic LSS

	Total			Men			Women		
	LSS	Non-LSS	*P* value	LSS	Non-LSS	*P* value	LSS	Non-LSS	*P* value
Number of participants	94	915		34	301		60	614	
Physical performance									
Six-meter walking time at a usual pace, s	6.3 ± 2.7	5.6 ± 2.1	0.003	6.0 ± 1.6	5.4 ± 1.5	0.03	6.5 ± 3.1	5.7 ± 2.3	0.02
Six-meter walking time at a maximal pace, s	4.5 ± 2.1	3.8 ± 1.3	<0.0001	3.9 ± 1.1	3.6 ± 1.1	0.09	4.8 ± 2.4	3.9 ± 1.5	<0.0001
Chair standing time, s	10.1 ± 4.0	8.8 ± 3.9	0.002	9.7 ± 2.8	8.7 ± 3.4	0.10	10.3 ± 4.6	8.8 ± 4.1	0.008
One-leg standing time, s	27.9 ± 23.5	36.8 ± 23.6	0.0005	27.7 ± 25.4	36.7 ± 23.7	0.04	28.0 ± 22.6	36.9 ± 23.5	0.006

Values are the means ± standard deviation.
Non-paired *t*-test was used to determine differences in measurements of physical performance between LSS and non-LSS.

little different in men aged 60–69 years to 80 years and older. The prevalence of lumbar spondylosis (LS) diagnosed as Kellgren/Lawrence (KL) grade two or greater (defined as osteophyte formation with and without disc space narrowing) was found to be significantly higher in men than in women[30]. The prevalence of LS in women was found to be higher with increasing age, while that in men found little difference over 60 years[13]. Interestingly, these distribution patterns are similar to the prevalence of symptomatic LSS in the present study. Anatomical LSS arises from degenerative LS, and facet osteoarthritis and/or hypertrophy, which is associated with narrowing of the space available for the neural elements[1]. This may be one reason for the similarity between LS and symptomatic LSS prevalence.

The present study was the first to show that, among the general population, 6-m walking time at a maximal pace was significantly associated with symptomatic LSS, while 6-m walking time at a usual pace was not. This may mean that participants with symptomatic LSS appeared to have no disadvantage concerning activities of daily living compared to those without symptomatic LSS. However, when requiring greater functional reserve, such as 6-m walking time at a maximal pace, differences between participants with and without symptomatic LSS appeared. This is also the first study to indicate that tasks requiring greater functional reserve, such as walking at a maximal speed, could be a more sensitive index in assessment of decreased physical performance due to symptomatic LSS.

There are several limitations in the present study. First, although the present study included more than 1,000 participants, these participants may not represent the general population as they were recruited from only two areas. However, anthropometric measurements were compared between participants and the general Japanese population, and no significant differences were found in BMI (men: 23.71 (3.41) and 23.95 (2.64), $P = 0.33$, women: 23.06 (3.42) and 23.50 (3.69), $P = 0.07$)[31]. In addition, the proportion of current smokers and current drinkers (those who regularly smoked or drank more than one drink/month) in the general Japanese population was compared with that in the study population. Proportions of current smokers and drinkers in men and that of current drinkers in women were significantly higher in the general Japanese population than in the study population, but there were no significant differences in that of current smokers in women (smokers: men, 32.6% in the Japanese population, 25.2% in study participants, $P = 0.015$; women, 4.9% in the Japanese population, 4.1% in study participants, $P = 0.50$; drinkers: men, 73.9% in the Japanese population, 56.8% in study participants, $P < 0.0001$; women, 28.1% in the Japanese population, 18.8% in study participants, $P < 0.0001$), suggesting that it is likely that the participants (both men and women) had healthier lifestyles than the general Japanese population. Second, this is a cross-sectional study, so any causal relationship between symptomatic LSS and physical performance cannot be clarified. The Wakayama Spine Study is a longitudinal survey, so further progress will help to elucidate any causal relationships. Thirds, total walking distance/duration was not measured, and this metric for walking would likely have been of greater relevance to symptomatic LSS than speed of walking. In addition, this study only represents the Japanese population, hence, prevalence in other countries may be quite different.

In conclusion, the present study clarified that the prevalence of symptomatic LSS was about 10% in a cohort resembling the Japanese general population. There was a difference in the prevalence of symptomatic LSS distribution by age strata between men and women. The 6-m walking time at a maximal pace was a more sensitive index for assessing decreased physical performance due to LSS than the 6-m walking time at a usual pace. Further longitudinal surveys of the Wakayama Spine Study will help to further clarify the incidence and risk factors for symptomatic LSS.

Author contributions

All authors worked collectively to develop the protocols and methods described in this paper. YI, SM, KN, NO, HO, TA, and NY were principal investigators responsible for the fieldwork in the Wakayama Spine Study. YI and SM performed the statistical analysis. YI, HY, SM, KN, HH, HO, TA, MY, and NY contributed to the analysis and interpretation of results. YI wrote the report. All authors read and approved the final report.

Role of the funding source

The study sponsors played no role in the study design, the collection, analysis, and interpretation of data, writing of the report, or the decision to submit the paper for publication. The corresponding author had full access to all the data and had the final decision to submit for publication.

Conflict of interest

The authors declare that we have no conflicts of interest.

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Ⅳ. 資　料

2008.10月

日高川町骨関節疾患予防検診追跡問診票

ID：

この度は調査についてお話しする機会をいただきどうもありがとうございます。
日高川町では東京大学22世紀医療センターと共同で変形性関節症や骨粗鬆症の予防を目的とした骨関節疾患予防検診を2005年10月から2006年2月に行って参りました。
今回は検診後3年の追跡調査として、この3年の間に皆様方の膝、腰椎、股関節の関節や骨の状態が健康なままなのか、それともすり減ったり曲がったりしてきていないかなどの変化をしたかを知るよい機会になると考えております。つきましては、皆様の生活がどのように変わったかどうかの問診票をお配りし、お尋ねをさせていただきます。皆様の骨関節に関する病気を予防するために、どのようなことに気をつければいいかについての問診票ですので、どうぞご協力くださいますようお願いいたします。
プライバシーの保持には万全を期しております。あなた様にご迷惑がかかるようなことは絶対にございませんので、どうぞご協力のほどよろしくお願いいたします。

生年月日：明治・大正・昭和 ＿＿年＿＿月＿＿日

性　　別：　　男　・　女

お 名 前：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

ご 住 所：＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿＿

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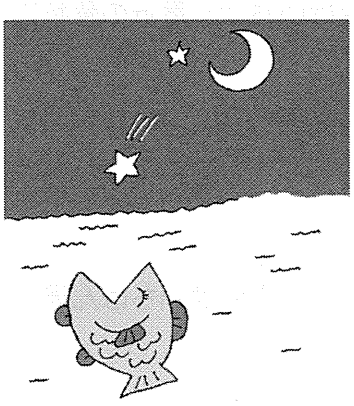
今日の日付：平成＿＿年＿＿月＿＿日

インタビュアーサイン ＿＿＿＿＿＿＿＿



東京大学医学部附属病院22世紀医療センター
関節疾患総合研究講座
臨床運動器医学講座
日高川町役場　保健福祉課

2008.8月吉日　吉村典子作成

● 骨関節疾患予防検診追跡問診票 ● ● ●

1．今までの骨折や骨の病気のこと。

3年前から今までに骨折や骨の病気がなかったかどうか、お教えください。あてはまるものの番号に○をおつけください。

1 この３年で骨折しましたか？

1）はい　　2）いいえ

1）はい の場合は以下の質問にお答えください。2）いいえ の場合は **11** へお進みください。

2 骨折の場所はどこですか？（もし２ヶ所以上の場合はすべてお答えください。）

1）右肩　（　　）歳
2）左肩　（　　）歳
3）右手首（　　）歳
4）左手首（　　）歳
5）右股関節(足の付け根)（　　）歳
　→ 骨折したとき手術をしましたか？
　　① した　② しない　③ わからない
6）左股関節(足の付け根)（　　）歳
　→ 骨折したとき手術をしましたか？
　　① した　② しない　③ わからない
7）背骨、腰骨（　　）歳
8）その他　①（　　）
　　（　　）歳
　　②（　　）
　　（　　）歳

3 骨折の原因はなんですか？詳しくお教えください。（もし２回以上の場合はすべてお答えください。）

（　　）
（　　）

4 骨折したときの場所はどこでしたか？（もし２回以上の場合はいちばん最近の骨折についてお答えください）

1）屋内
2）屋外
3）その他（　　）

5 骨折したときは、どのくらいの明るさでしたか（もし２回以上の場合はいちばん最近の骨折についてお答えください）

1）昼間のような明るさで　　2）薄明かりで　　3）暗闇で

6 骨折したときの服装は（もし２回以上の場合はいちばん最近の骨折についてお答えください）

1）和服
2）洋服
3）その他（具体的に　　）

7 そのときの履き物は（もし２回以上の場合はいちばん最近の骨折についてお答えください）

1）くつ　2）げた　3）ぞうり、サンダル　4）スリッパ
5）くつした、たび　6）はだし　7）その他（具体的に　　）

8 そのときなにか別の病気や次に当てはまることがありましたか？（もし２回以上の場合はいちばん最近の骨折についてお答えください）

（下の番号からお選びください。いくつ選んでも結構です。）

1）脳卒中　2）心臓の病気　3）ふらつき、めまい
4）膝などが固く動きにくい　5）興奮していた　6）ゆううつだった
7）目がかすんでいた　8）その他（　　）
9）特になし

9 そのとき、次の薬や飲み物を飲んでいましたか？（もし２回以上の場合はいちばん最近の骨折についてお答えください）

（下の番号からお選びください。いくつ選んでも結構です。）

1）精神安定剤・睡眠薬
2）降圧剤（血圧の薬）
3）くしゃみ止めや風邪薬
4）アルコール
5）その他（具体的に　　）

10 今も痛いなど骨折の影響は今もありますか？

1）はい　→　（具体的に　　）
2）いいえ

---

11 ３年前から今までに、骨粗鬆症（骨が弱い、もろい）といわれましたか。

1）はい
2）いいえ

12 ３年前から今までに骨粗鬆症の治療（骨が強くなる）を受けたことがありますか。

1）はい（1．筋注　2．静注　3．服薬 → 薬の名前　　）
2）いいえ

2. いままでのころびやねこんだことについて

1 この３年でころんだことがありますか。
1）ある
2）ない
1）ある と答えた方は以下の質問にお答えください。2）ない 方は **11** へお進みください。

2 ころんだことがある方は何回ぐらいころびましたか。
３年で（　　）回ぐらい

3 ころんだことがある方は、その結果どのようになりましたか。（何回もころんだ方は一番最近の転びについてお答えください。）
1）骨折した　→　骨折した部位は（　　）
2）骨は折れなかったが何日か寝込むほどの痛みがあった
3）打ち身はあったがねこむほどではなかった
4）特になんということはなかった

4 ころびの原因はなんですか？詳しくお教えください。
（具体的に　　）

5 ころんだときの場所はどこでしたか？
1）屋内
2）屋外
3）その他　（　　）

6 そのときの明るさは
1）昼間のような明るさで　　2）薄明かりで　　3）暗闇で

7 そのときの服装は？
1）和服
2）洋服
3）その他（具体的に　　）

8 そのときの履き物は？
1）くつ　　2）げた　　3）ぞうり、サンダル　　4）スリッパ
5）くつした、たび　　6）はだし　　7）その他（具体的に　　）

9 そのときなにか別の病気や次に当てはまることがありましたか？
（いくつ○を付けても結構です。）

1）脳卒中　2）心臓の病気　3）ふらつき、めまい
4）膝などが固く動きにくい　5）興奮していた　6）ゆううつだった
7）目がかすんでいた　8）その他（　　）
9）特になし

10 そのとき、次の薬や飲み物を飲んでいましたか？
（いくつ○を付けても結構です。）

1）精神安定剤・睡眠薬
2）降圧剤（血圧の薬）
3）くしゃみ止めや風邪薬
4）アルコール
5）その他（具体的に　　）

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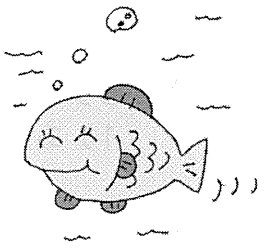
11 この3年で1ヶ月以上続けて入院したことはありますか？

1）はい（それはなぜですか？　　）
2）いいえ



3. いままでの病気やくすりについて

3年前から今までに新たに病気にかかった（医療機関で言われた、医師に診察してもらった）ことがないかどうか、お教えください。

1 3年前から今までに高血圧にかかったことがありますか。
1）ある　　2）ない

2 3年前から今までに高脂血症にかかったことがありますか。
1）ある　　2）ない

3 3年前から今までに糖尿病にかかったことがありますか？
1）ある　　2）ない

4 3年前から今までにインスリン治療をしたことがありますか？
1）ある　　2）ない

5 3年前から今までに痛風にかかったことがありますか？
1）ある　　2）ない

6 3年前から今までに狭心症にかかったことがありますか？
1）ある　　2）ない

7 3年前から今までに気管支喘息にかかったことがありますか？
1）ある　　2）ない

8 3年前から今までにうつ病にかかったことがありますか？
1）ある　　2）ない

9 3年前から今までに胃潰瘍にかかったことがありますか？
1）ある　　2）ない

10 3年前から今までに十二指腸潰瘍にかかったことがありますか？
1）ある　　2）ない

11 3年前から今までに胃にピロリ菌がいると言われたことがありますか？
1）ある　　2）ない
→ 1）ある の場合除菌をしましたか？　① した　② しない

12 3年前から今までに腎透析をしたことがありますか？

1）ある　　2）ない

13 3年前から今までに胃の手術を受けたことがありますか。

1）ある　　2）ない

→ 1）ある の場合、胃を全部手術で摘出しましたか？

（① はい、全部　② いいえ、一部のみ　③ その他（具体的に　　）

14 3年前から今までに、がんと診断されたことはありますか？

1）ある　　2）ない

→ 1）ある の場合、部位はどこですか？（　　）

15 （男性のみ）3年前から今までに前立腺肥大にかかったことがありますか？

1）ある　　2）ない

16 3年前から今までにその他のけがや病気で医療機関にかかったことはありますか？

1）ある　　2）ない

→ 1）ある の場合（具体的に　　）

17 3年前からいままでに3ヶ月以上次のくすりをのんだことがありますか。

			名前がわかれば記入してください
① 降圧薬（血圧のくすり）	1）はい	2）いいえ	
② コレステロールや脂肪を下げる薬	1）はい	2）いいえ	
③ 血糖を下げる薬（糖尿のくすり）	1）はい	2）いいえ	
④ 尿酸を下げる薬（痛風のくすり）	1）はい	2）いいえ	
⑤ ステロイドホルモン	1）はい	2）いいえ	
⑥ 経口避妊薬（妊娠をおさえるくすり）	1）はい	2）いいえ	
⑦ 抗うつ剤（気分のおちこみをおさえるくすり）	1）はい	2）いいえ	
⑧ 安定剤、睡眠薬	1）はい	2）いいえ	
⑨ 消炎鎮痛剤（痛みどめ）	1）はい	2）いいえ	
⑩ カルシウム剤	1）はい	2）いいえ	
⑪ ビタミンD	1）はい	2）いいえ	
⑫ カルシトニン（骨の注射）	1）はい	2）いいえ	
⑬ エビスタ（骨を強くする薬で1日1回のむくすり）	1）はい	2）いいえ	
⑭ ビスフォスフォネート（朝、起きぬけに飲んで、30分ねころばないでといわれるくすり）	1）はい	2）いいえ	

4. 関節の痛みについて

1 この３年の腰痛について教えてください。（１日以上続く痛みについてお答えください。）

１）３年前には痛みはなかったが今は痛い

２）３年前も今も痛みがある

３）３年前には痛みがあったが今は痛くない

→ ３）痛みがあったが今は痛くないかたは、医療機関で治療をしましたか？

① はい　　② いいえ

→ ３）① 治療をしたかたは、どのような治療をしましたか？

ア）薬を飲んだ　イ）湿布を貼った　ウ）理学療法（針、お灸を含む）

エ）安静にした　オ）その他（具体的に　　）

４）３年前も今も痛みはない

2 この３年の膝痛について教えてください。（１日以上続く痛み）

１）３年前には痛みはなかったが今は痛い → 痛いのは（① 右　② 左　③ 両方）

２）３年前も今も痛みがある → 痛いのは（① 右　② 左　③ 両方）

３）３年前には痛みがあったが今は痛くない

→ ３）痛みがあったが今は痛くないかたは、医療機関で治療をしましたか？

① はい　　② いいえ

→ ３）① 治療をしたかたは、どのような治療をしましたか？

ア）薬を飲んだ　イ）湿布を貼った　ウ）理学療法（針、お灸を含む）

エ）安静にした　オ）その他（具体的に　　）

４）３年前も今も痛みはない

3 この３年の肩痛について教えてください。（１日以上続く痛み）

１）３年前には痛みはなかったが今は痛い → 痛いのは（① 右　② 左　③ 両方）

２）３年前も今も痛みがある → 痛いのは（① 右　② 左　③ 両方）

３）３年前には痛みがあったが今は痛くない

→ ３）痛みがあったが今は痛くないかたは、医療機関で治療をしましたか？

① はい　　② いいえ

→ ３）① 治療をしたかたは、どのような治療をしましたか？

ア）薬を飲んだ　イ）湿布を貼った　ウ）理学療法（針、お灸を含む）

エ）安静にした　オ）その他（具体的に　　）

４）３年前も今も痛みはない

4 この３年のその他の痛みについて教えてください。（１日以上続く痛みについてお答えください。）

１）３年前には痛みはなかったが今は痛い

→ １）痛みを感じるのはどこですか（具体的に　　）

２）３年前も今も痛みがある

→ ２）痛みを感じるのはどこですか（具体的に　　）

３）３年前には痛みがあったが今は痛くない

→ ３）痛みがあったが今は痛くないかたは、医療機関で治療をしましたか？

① はい　　② いいえ

→ ３）① 治療をしたかたは、どのような治療をしましたか？

ア）薬を飲んだ　イ）湿布を貼った　ウ）理学療法（針、お灸を含む）

エ）安静にした　オ）その他（具体的に　　）

４）３年前も今も痛みはない

5 この３年の臀部のしびれについて教えてください。（１日以上続くしびれについてお答えください。）

１）３年前にはしびれはなかったが今はしびれる

→ １）しびれるのは（① 右　② 左　③ 両方）

２）３年前も今もしびれがある → しびれるのは（① 右　② 左　③ 両方）

３）３年前にはしびれがあったが今はしびれない

４）３年前も今もしびれはない

6 この３年の太ももから下肢にかけてのしびれについて教えてください。（１日以上続くしびれについてお答えください。）

１）３年前にはしびれはなかったが今はしびれる

→ １）しびれるのは（① 右　② 左　③ 両方）

２）３年前も今もしびれがある → しびれるのは（① 右　② 左　③ 両方）

３）３年前にはしびれがあったが今はしびれない

４）３年前も今もしびれはない

7 この３年の足の裏のしびれについて教えてください。（１日以上続くしびれについてお答えください。）

１）３年前にはしびれはなかったが今はしびれる

→ １）しびれるのは（① 右　② 左　③ 両方）

２）３年前も今もしびれがある → しびれるのは（① 右　② 左　③ 両方）

３）３年前にはしびれがあったが今はしびれない

４）３年前も今もしびれはない

5. 運動や仕事、日光浴などについて

1 現在の一般的な健康状態はいかがですか。
1）とても調子がよい
2）調子がよい
3）まずまず
4）すこし調子が悪い
5）調子が悪い

2 毎日、歩いている時間は合計どのくらいですか。
1）なし
2）30分未満
3）30分～1時間
4）1時間以上

3 毎日、自転車にのっている時間は合計どのくらいですか。
1）なし
2）30分未満
3）30分～1時間
4）1時間以上

4 いま汗をかいたり、息がきれるほどのスポーツや運動をしていますか。
1）しない
2）たまにする
3）週2時間未満
4）週2時間以上
→ 2～4）運動をするかたはどのような運動をしていますか？
（具体的に　　）

5 15～25歳の時の仕事と家庭での運動量の程度はどのくらいでしたか。
1）軽い（ほとんど家にいる～買い物に出る程度）
2）中等度（歩行、ゴルフ、サイクリング、ゲートボールなど）
3）強い（ダンスなど、仕事では運搬など）
4）かなり強い（水泳など、仕事では林業、激しい農作業や工事現場など）

6 25～50歳の時の仕事と家庭での運動量の程度はどのくらいでしたか。
1）軽い（ほとんど家にいる～買い物に出る程度）
2）中等度（歩行、ゴルフ、サイクリング、ゲートボールなど）
3）強い（ダンスなど、仕事では運搬など）
4）かなり強い（水泳など、仕事では林業、激しい農作業や工事現場など）

7 今、仕事と家庭での運動量の程度はどのくらいですか。
1）軽い（ほとんど家にいる～買い物に出る程度）
2）中等度（歩行、ゴルフ、サイクリング、ゲートボールなど）
3）強い（ダンスなど、仕事では運搬など）
4）かなり強い（水泳など、仕事では林業、激しい農作業や工事現場など）

8 15～25歳の時に汗をかいたり、息がきれるほどのスポーツや運動をしましたか。
1）しなかった
2）たまにした
3）週１時間未満
4）週１～２時間まで
5）週２時間以上

9 25～50歳の時に汗をかいたり、息がきれるほどのスポーツや運動をしましたか。
1）しなかった
2）たまにした
3）週１時間未満
4）週１～２時間まで
5）週２時間以上

10 今、汗をかいたり、息がきれるほどのスポーツや運動をしていますか。
1）しない
2）たまにする
3）週１時間未満
4）週１～２時間まで
5）週２時間以上

11 あなたが一番長く従事したお仕事はどのような種類でしたか。
1）おもに事務作業
2）おもに現場作業
3）その他（具体的に　　）

12 あなたが一番長く従事したお仕事は主にどこで働くものでしたか。
1）主に屋内
2）主に屋外
3）屋内と屋外と半々ぐらい
4）その他（具体的に　　）

13 あなたのその仕事は次のうちどれが一番近い働き方ですか。

1）ほとんど座ったままの仕事で歩くことは少ない。
（時計屋、事務職、工場での針仕事など）

2）歩くことは多いが、重いものを持ち上げたり運ぶことは少ない。
（店員、主婦、軽作業員、動く必要のある事務職など）

3）歩いたりものを運んだりすることが多い。またはときどき段や坂をのぼる。
（大工、農業など）

4）重肉体労働で重いものを持ち上げたり、運んだり、シャベルで掘り返したりする。
（林業、激しい農作業、建設業の現場など）

14 あなたは最近どのくらい日光浴をしていますか。

1）しない
2）たまにする
3）週２時間未満
4）週２時間以上

15 ここ１ヶ月間の１日平均睡眠時間はどのくらいでしたか。

1）５時間未満　　2）５時間以上～６時間未満　　3）６時間以上～７時間未満
4）７時間以上

16 25歳の頃の身長は何センチでしたか。

（　　）cm

17 25歳を越えてから一番やせたときは何kgでしたか。

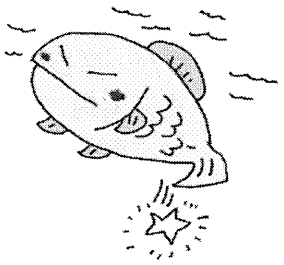
（　　）歳ぐらいの時　（　　）kg

18 現在の視力で新聞の字を見ることができますか。

1）眼鏡をかけなくても見える
2）眼鏡をかければ見える
3）見えない

19 今自分の歯が何本残っていますか？

1）全部自分の歯
2）自分の歯が残っている。→（　　）本ぐらい
3）自分の歯はない。→（　　）歳から



6. アルコール・たばこについて

1 この3年でアルコールの飲み方はどうなりましたか？

1）前と変わらず飲んでいる
2）飲んでいるが量は減った
3）前よりも量が増えた
4）やめていたが飲むようになった
5）今までに飲んだことがなかったが飲むようになった
6）飲んでいたがやめた
7）前も今もほとんど飲まない
8）その他（具体的に　　）

1～5）今飲んでいるかたは以下の質問にお答えください。
6）飲んでいたがやめたかたは **4** へお進みください
7）ほとんど飲まないかたは **7** へお進みください。

2 **1** で1～5）飲んでいるかたは今どのくらいの回数飲みますか？

1）ほとんど毎日（週5日以上）
2）週3～4回
3）週1～2回
4）週1回未満

3 **1** で1～5）飲んでいるかたは一回あたりの量はどのくらいですか？

ビール（瓶・缶）	本・缶
ワイン（グラスで）	杯
日本酒	合
焼酎	合
ウィスキー・ブランディ	杯
その他（　　）	杯

4 **1** で6）飲んでいたがやめたかたは、いつやめましたか？

（　　）ヶ月前

5 **1** で6）飲んでいたがやめたかたはどのくらいの回数飲んでいましたか？

1）ほとんど毎日（週5日以上）
2）週3～4回
3）週1～2回
4）週1回未満