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TARLOV CYST

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ABSTRACT

Aim: Our aim is to analyse Tarlov cysts according to their size, localization and bone destruction.

Material and Method: We inspected the lumbar magnetic resonance imaging (MRI) datas of 68 patients for one year from the radiology database retrospectively. We excluded the patients with lumbar malignities such as tumors and developmental anomalies.

Results: The mean age of the participants was 52.2±13.7 years, and 72.1% of the population were females. Most frequently involved vertebrae were S2. Ratio is 26.5% of the patients with multiple Tarlov cysts. Mean diameter of the cysts was 11.8±7.7 mm. Destruction was present in 44.1% of the cases. When the characteristics of patients were compared between males and females mean age (p=0.262), cyst size (p=0.307), distribution of involved vertebrae (p>0.05 for all levels), number of cysts (p=0.063), and destruction pattern (p=0.195) were all-similar between genders.

***Conclusion*:** Tarlov cysts are usually asymptomatic and are found incidentally during radiodiagnostic examinations so that they do not treated with surgery till compression symptoms occur.

Key words: Tarlov cyst, sacral perineural cyst, sacral spinal cyst

Level of Evidence: Retrospective clinical study, Level III

INTRODUCTION

Sacral perineural cysts were first described by Tarlov in 1938 as an incidental finding at autopsy and were later classified as Type II meningeal cysts by Nabors et al. [5,10]. They are lesions of the nerve root on the extradural components in the sacral region. The cysts arise at the junction of the dorsal ganglion and the posterior nerve root and develop between the endoneurium and perineurium [3].

The prevalence of sacral perineural cysts has been estimated to be approximately 1.5 to 4.6 % (4). Most of the cysts are asymptomatic and are found incidentally during radiodiagnostic examinations for other reasons. Approximately 1 % of Tarlov cysts size increase and cause symptoms related to local compression [2]. Pathogenesis of these cysts is unclear and there is no consensus on the optimal treatment modality.

MATERIAL AND METHOD

We inspected the lumbar magnetic resonance imaging (MRI) datas of the patients for one year from the radiology database retrospectively (Figure-1,2).

We excluded the patients with lumbar malignities such as tumors and developmental anomalies. We evaluated 68 patients with Tarlov cysts and analyse according to their size, localization and bone destruction.

Statistical Analyze

Numerical variables were presented as mean and standard deviation, and categorical variables were presented as frequency and percent. The comparisons between independent groups were conducted by Mann-Whitney U test for numerical variables, and Chi-square test for categorical variables. A Type-I

error level of 5% was considered as statistical significance in all analyses. The SPSS 21 software (IBM Inc., Armonk, NY, USA) was used for the statistical analyses in this study.

Figure-1. Sagittal T2-MRI image of level S2-3 Tarlov cyst.

Figure-2. Axial T2-MRI image of level S2-3 Tarlov cyst.

RESULTS

A total of 68 patients were included in this study. The mean age of the participants was 52.2 ± 13.7 years, and 72.1 % of the population were females. Most frequently involved vertebrae were S2 (76.5 %), S3 (38.2 %), and S1 (25 %). 26.5 % of the patients had multiple Tarlov cysts. Mean diameter of the cysts was 11.8 ± 7.7 mm. Destruction was present in 44.1 % of the cases. General characteristics of the patients were presented in Table-1.

When the characteristics of patients were compared between males and females (Table-2) mean age (p=0.262), cyst size (p=0.307), distribution of involved vertebrae (p>0.05 for all levels), number of cysts (p=0.063), and destruction pattern (p=0.195) were all similar between genders.

Table-1. General characteristics of patients

	Mean	**Standard Deviation**
Age (years)	52.2	13.7
Size (mm)	11.8	7.7
	n	**%**
Gender		
Male	19	27.9
Female	49	72.1
Level		
L5	1	1.5
S1	17	25
S2	52	76.5
S3	26	38.2
S4	4	5.9
Count		
Multiple	18	26.5
Single	50	73.5
Destruction		
(+)	30	44.1
(-)	38	55.9

Table-2. General characteristics of patients according to gender

	Male		Female		p
	Mean	**Standard Deviation**	**Mean**	**Standard Deviation**	
Age (years)	54.8	11.8	51.1	14.3	0.262
Size (mm)	10.3	5.5	12.3	8.3	0.307
	n	**%**	**n**	**%**	
Level					
L5	-	-	1	2	1.000
S1	4	21.1	13	26.5	0.761
S2	17	89.5	35	71.4	0.201
S3	6	31.6	20	40.8	0.482
S4	-	-	4	8.2	0.570
Count					0.063
Multiple	2	10.5	16	32.7	
Single	17	89.5	33	67.3	
Destruction					0.195
(+)	6	31.6	24	49	
(-)	13	68.4	25	51	

DISCUSSION

Tarlov cysts often arise between the endoneurium and perineurium and occur on the extradural components of sacrococcygeal nerve roots at the junction of dorsal root ganglion and posterior nerve roots [3]. The cysts are usually multiple extending around the circumference of the nerve, and can enlarge to compress neighboring nerve roots and cause significant bone erosions. We found 44.1 % bone erosions in our study.

The pathophysiology of Tarlov cysts remains unclear, but several hypotheses have been proposed, including inflammation within the nerve root cysts followed by inoculation of fluid, developmental or congenital origin, arachnoidal proliferation along and around the exiting sacral nerve root, and breakage of venous drainage in the perineuria and epineurium secondary to hemosiderin deposition after trauma [1,5-6,8]. The most accepted theory to explain the progression in the size of the cyst is the so-called ball-valve mechanism, in which cerebrospinal fluid enters the cyst with systolic pulsation but is unable to exit through the same portal during diastole [2].

MRI and Computed tomography (CT) myelography are useful radiodiagnostic tools for Tarlov cysts but the final diagnosis is histopathological diagnosis because the cyst walls contain peripheral nerve fibers and ganglionic cells covered with meningeal epithelium. Tarlov cysts were seen clearly by T1- and T2-weighted MRI sequences; the cysts were seen as fluid filled spaces with the CSF signal at a given MRI sequence as a low signal on T1-weighted images and a high signal on T2-weighed images [9]. MRI is quite useful for surgical planning because the absence of interference from bone, enhanced resolution of tissue density, useful in studying sacral perineural cysts and their relationship to the surrounding structures could be clearly demonstrated.

Symptoms with local compression of Tarlov cysts are local low back sacrococcygeal pain, sciatic pain, leg weakness and numbness, bowel and bladder dysfunction, and sexual impotence [1]. Symptoms can change with changes of the posture and increased CSF pressure with coughing, Valsalva maneuvers, standing, lifting and climbing stairs.

Tarlov cysts are usually asymptomatic and are found incidentally during radiodiagnostic examinations so that they do not treated with surgery until compression symptoms occur.

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