http://www.medscidiscovery.com
OPEN ACCESS JOURNAL

ISSN: 2148-6832

MSD Medical Science and Discovery
2018; 5(3):137-40

Research Article Doi: 10.17546/msd.397511

Coincidental Lesions that have been seen in Patients with Lumbar Discopathy at Spinal MR Examination

Ahmet Eroglu[1]*, Ilhan Yilmaz[2]

Abstract

Objective: The present Study has been made in order to investigate and examine the prevalence and type of the coincidental findings seen in patients with lumbar discopathy subjected to Lumbar Spinal Magnetic Resonance Imaging (MRI).

Material and Method: the 613 patients who were thought to have been Lumbar discopathy and who were subjected to Lumbar MRI have been examined. Lumbar MRIs were reported by musculoskeletal radiologists. Vertebra hemangiomas, tarlov cysts, Renal cysts, schmorl nodules, liver cysts were included in this study.

Findings: Total 613 patients (male-female rate, 354: 259; age range, 16-79 years of age) were assessed. Vertebra Hemangiomas at 5.7% of the patients (n=35) vertebra hemangioma, at 3.5% of patients (n=22) tarlov cyst, at 2.2% (n=14) kidney cyst, at 1.4% (n=9) schmorl nodule, at 0.3% (n=2) of the patients liver cyst were found.

Conclusion: Detected coincidental findings have seen quite common at the examination of MRI of the patients with lumbar discopathy. Although the most of the coincidental findings which were detected at MRI of Lumbar Spine have been benign, the awareness of their prevalence is helpful in diagnosing the lesions which are not related with the symptoms.

Keywords: Lumbar, MRI, Discopathy, Tarlov Cyst

Introduction

Lumbar discopathies are one of the common causes of lumbar (back) pain and disability seen in our society nowadays, approximately 60 percent to 80 percent of adults suffer lumbar (back) pain throughout their lifetime (1,2). Lumbar disc hernia is among the main causes of the lumbar/back pain, which are at the upper ranks. Gradual degeneration of Nucleus Pulposus and Anulus Fibrosus which are the disc components paves the way for this disease. Disc, which becomes degenerated in time depending on age and peripheral factors, shows tendency to herniation (2). Lumbar disc hernia is diagnosed in accordance with clinical symptoms and findings supported by radiological examinations (2). The lumbar disc and neighboring anatomic structures have been displayed in detail with imaging of MRI and Lumbar anatomy at different dimensions, HD Image of the soft tissue and by utilizing different MRI sequences (3). In this study, our objective was to investigate lesions independent from the main complaint falling within the imaging areas of the patients undergone to Lumbar MRI because of the Lumbar/Back Pain and to examine layout and distribution of these lesions.

Material and method

Pre-diagnosis of Lumbar Discopathy and radiological examination of 613 patients whom Lumbar MRI applied have been assessed in the present study. The scrutiny on MRI has been carried out by musculoskeletal radiologists who are well experienced in the field of spinal lumbar MRI. The coincidental finding has been defined as any abnormal finding included in the imaging field which was not associated with the main complaint. Vertebral hemangioma, tarlov cyst, Renal cyst, schmorl nodule, liver cyst were included in the study. Imaging data were obtained by the same MR Device (Avanto 1.5 Tesla, Siemens, Germany).

Received 22-02-2018 **Accepted** 21-03-2018 **Available Online** 31-03-2018
1 Haydarpaşa Sultan Abdülhamid Training Hospital, Dept. of Neurosurgery, Istanbul, TR
2 Sisli Hamidiye Etfal Training Hospital, Dept. of Neurosurgery, Istanbul, TR
*** Corresponding Author:** Ahmet Eroglu **E-mail:** drahmeteroglu@gmail.com **Phone:** +90 (506) 203 62 31

http://dx.doi.org/10.17546/msd.397511

Results

the 354 (57.7%) male patients and 259 (42.3%) female patients were subjected into this study. We have come across with coincidental findings in 82 patients. There were vertebra hemangioma at 5.7% (n=35) of the vertebra patients, tarlov cyst at 3.5% (n=22), Renal cyst at 2.2% (n=14), schmort nodule at 1.4% (n=9), liver cyst at 0.3% (n=2).

There were 4 patients with Vertebral Hemangioma+, 4 patients with Tarlov Cyst, 3 patients with Vertebral Hemangioma+ Renal Cyst at the same time. Renal (Figure 1a,b). There was not any coincidental lesion in 531 patients (Table 1). Patients' age ranged from 16 to 79 years and average age was 47,6.

Table 1: Layout/Distribution of the Coincidental Lesions

Coincidental Lesions	Patient Number	%
Vertebral Hemangioma	35	5.65
Tarlov Cyst	22	3.55
Renal Cyst	14	2.26
Schmourl Nodule	9	1.45
Liver Cyst	2	0.32
Vertebral Hemangioma+ Tarlov Cyst	4	0.65
Vertebral Hemangiom+ Renal Cyst	3	0.48
Lesion, Undetected	531	85.65
Total	620	100.00

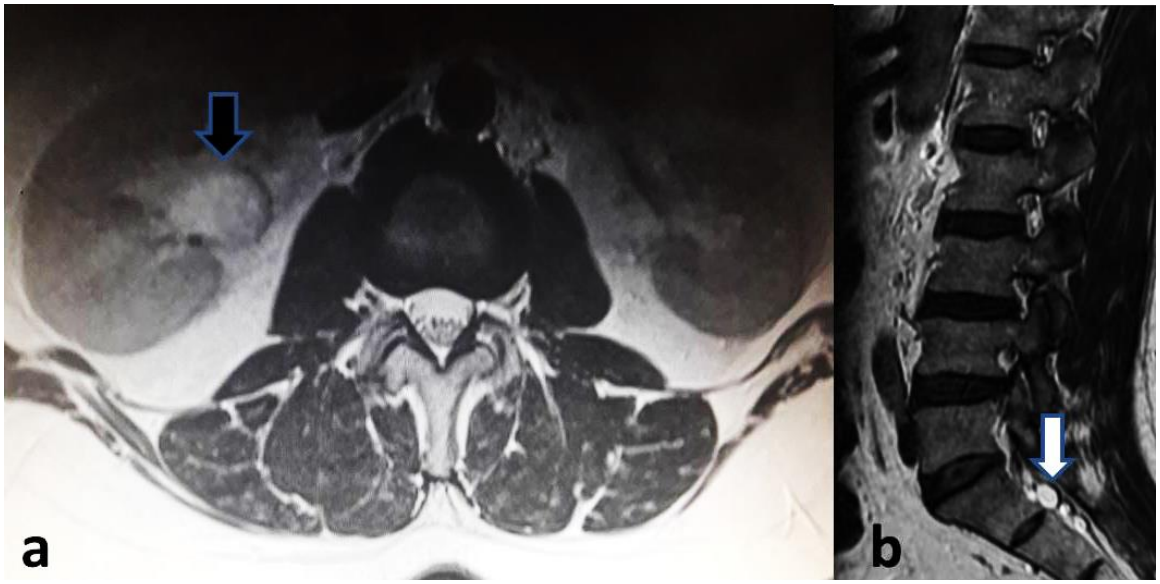

Figure 1: (a) Lumbar MRI (T2) at weighted axial section, right calyx cystic lesion detected (black arrow), (b) Lumbar MRI (T2) at weighted sagittal section sacral region, arachnoid cyst (tarlov cyst) detected (white arrow)

Discussion

In the evaluation of patients considered to be lumbar disc hernia, lumbar MRI is widely used technique for collecting primary data. In the most health centers after commissioning into operation of image archiving and communication system set up in order to scrutinize image assessment, higher number of findings have been observed in Lumbar MRIs (1,4). In daily practices of radiologists it has been reported that coincidental lesions detected at the scrutiny of Lumbar MRI were too much (3,5).

Coincidental findings have been considered as the asymptomatic findings detected in patients with the pre-diagnosis of lumbar discopathy, who was undergone Lumbar MRI (1). The great majority of these coincidental findings are benign (1). Even if the lesions which are thought to be benign have been usually ignored, their effects on human health are not known clearly (4, 5). Some of these lesions may have been the initial stage lesions of some diseases and therefore they should be assessed systematically. Even if the findings such as hemangioma, tarlov cyst, etc remain as asymptomatic at the next period, it has been reported that renal and liver cysts may require monitoring, and what's more they may lead to serious health problems (6, 7).

Studies, which have been carried out in relation with the coincidental findings located at the examinations of Lumbar, exist in literature. Wagner et al. (5), in 2500 MRI reports which were examined by them, have come across with 202 coincidental findings in 183 patients; Park et al. (1) have located 107 coincidental findings in 1268 patients who were thought to have been suffered with lumbar disc hernia. Green et al. however have examined 300 MRI reports and stated that they have spotted 25 coincidental findings (8). In examining of MRI of 613 patients there were 82 (13,3%) coincidental findings in our Study. When it is compared with other studies we can see that the rate of coincidental lesion was somewhat high, which, we think it was because our average patient age (average age: 47,6) was high.

Vertebra hemangiomas are benign, which consist 4% of all spinal tumors (9). Vertebral hemangiomas are benign vascular tumors of the body and are seen too often on the radiological imaging (10). Although it is a most frequent lesion, less than 1% of it, gives neurological findings (11, 12). In the study carried out by Barzin and Maleki in the autopsy reports the frequency of vertebra hemangioma has been determined as 9.5% (9). In our present study we have determined it at the rate of 5.7% in lumbar MRG Reports.

Schmorl nodules among other lesions that we have detected coincidentally were defined in 1930 by Christian George Schmorl. Schmorl nodules develop with the hernia of vertebra, nucleus pulposus from cracks on the cartilage plaques towards the section of spongiosa. It becomes visible by development of reactive sclerosis around it. It may be either congenital, or may develop as the result of passing the disc pressure to the cartilage structure migrating towards the vertebra corpus depending on the degeneration (13). Since Schmorl nodules expanded to the disc volume towards the vertebra corpus, there are some views that the risk of disc hernia was decreased (14).

In our Study, tarlov cysts which we determined them at the 2nd frequency and called them also as sacral per-neural cysts after hemangiomas have been located at the sacral region, and appeared coincidentally. Tarlov cysts are originated from the junction point of dorsal root ganglion and the nerve root, and it is the meningeal dilatation of the sheath of vertebra's dorsal base depending on subarachnoid space (15). They are accepted generally as congenital. They are usually asymptomatic and they do not lead to any neurological findings (16). Nevertheless, in the literature, although it is seen rarely in some cases, tarlov cysts may cause clinical findings such as radiculopathy due to the fact that tarlov cyst puts pressure onto the rooted nerve toot or neighboring nerve roots (16). Nabors et al. (17) determined the frequency/density of sacral peri-neural cyst as the 1%. Paulsen et al. (18) reported that the rate which is less than 1% of sacral peri-neural cysts was symptomatic. The rate of appearance of tarlov cysts in our study was 3.5% and all of them were asymptomatic.

Liver cysts are benign tumors liquid content in liver, generally formed as single, and defined as a simple cyst. Although etiology has not been revealed clearly, it is thought that great majority of them is congenital (19). They are detected generally during check-ups or in any way at the time of radiological tests. The simple cysts do not give much symptom. But cyst tending to enlarge may cause complaints of jaundice depending on right upper stomach-ache, distension (bloating) and biliary obstruction (20). Tuncel et al. reported that frequency of these cysts was 0.15% (21). In the study carried out by Quattrocchi et al. frequency of liver cysts was found as the 0.2% (6). In our present Study the rate of liver cyst is 0.3% and both cases are also asymptomatic.

The simple renal cysts are lesions which are most frequently seen in kidney. Although its frequency rises at older ages, it has seen less in the population of young group (22). The simple cysts which are not give clinical findings generally have been detected coincidentally as the result of radiological tests such as ultrasonography, computerized tomography and MRI, etc. They rarely require treatment. Some patients suffer, be it rare, such symptoms as pain, hypertension, hematuria, cyst rapture, etc. (23). Its rate of appearance at below 18 years of age is 0.10% to

0.45%, when the age goes up the rate has been rising up to 20% (24, 25). In the study carried out by Ciezanowski et al. the prevalence of renal cyst has been found as the 2.9%; the renal cyst prevalence has been determined as 6.4% in the study carried out by Tuncel et al. (21). In our present study however this rate was 2.2%. Some of the renal cysts which have been detected coincidentally are clinically important because of their pressure onto kidney and leading to such findings as hydronephrosis and requires immediate treatment in order to prevent long term damage of kidney (3, 22). Konnak et al. (26) reported that in patients with renal carcinoma detected coincidentally, their rate of surviving patients who applied symptoms and diagnosis of renal carcinoma were higher than the former. This shows that coincidental renal lesions perhaps that renal carcinoma may be early stage and therefore we thought that rate of surviving have increased due to early stage diagnosis.

The coincidentally detected lesions in Lumbar MRI, even if they were independent from the main complaint, may bear importance from the clinical point of view. Therefore, systematical assessment of spinal and non-spinal structures in Lumbar MRI is important in daily practical. We have been thinking that to get information on the frequency of the coincidental lesions, to manage them and their effects on the life of patients and to provide information to patients about this issue is necessary.

Acknowledgments, Funding: None

Conflict of Interest: The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Author's Contributions: AE, IY: Research concept and design; data collecting, MRI analysis and interpretation of data. All authors approved the final version of the manuscript,

Ethical issues: All Authors declare that Originality of research/article etc... and ethical approval of research, and responsibilities of research against local ethics commission are under the Authors responsibilities. The study was conducted due to defined rules by the Local Ethics Commission guidelines and audits.

References

1. Park H-J, Jeon Y-H, Rho M-H, et al. Incidental findings of the lumbar spine at MRI during herniated intervertebral disk disease evaluation. AJR Am J Roentgenol. 2011;196:1151-5.

2. Suri P, Hunter DJ, Joueve C, et al. Inciting events associated with lumbar disc herniation. Spine J 2010;10:388–95.

3. Cieszanowski A, Maj E, Kulisiewicz P, et al. Non-contrast-enhanced whole-body magnetic resonance imaging in the general population: the incidence of abnormal findings in patients 50 years old and younger compared to older subjects. PLoS One. 2014;9(9).

4. Kamath S, Jain N, Goyal N, Mansour R, Mukherjee K. Incidental findings on MRI of the spine. Clin Radiol 2009;64:353-61.

5. Wagner SC, Morrison WB, Carrino JA, Schweitzer ME, Nothnagel H. Picture archiving and communication system: effect on reporting of IF. Radiology 2002;225:500–5.

6. Quattrocchi CC, Giona A, Di Martino AC, Errante Y, Scarciolla L, Mallio CA. Extra-spinal incidental findings at lumbar spine MRI in the general population: a large cohort study. Insights Imaging. 2013;4:301-8.

7. Sobhan M, Samiee M, Asgari Y, Mansour A. Incidental Findings of the Lumbar Spine at MRI in Patients Diagnosed with Discopathy International Journal of Medical Imaging 2016;4:44-7.

8. Green L. PACS: Effect on incidental findings. Radiol Manage 2004;26:26-9.

9. Barzin M, Maleki I. Incidence of vertebral hemangioma on spinal magnetic resonance imaging in Northern Iran. Pak J Biol Sci. 2009;15;12:542-4.

10. Kulshrestha M, Byrne P. Multiple primary haemangiomas of bone mimicking vertebral metastases. R Soc Med 1997;90:632-4.

11. Templin CR, Stambough JB, Stambough JL. Acute spinal cord compression caused by vertebral hemangioma. Spine J 2004;4:595-600.

12. Hadjipavlou A, Tosounidis T, Gaitanis I, Kakavelakis K, Katonis P. Balloon kyphoplasty as a single or as an adjunct procedure for the management of symptomatic vertebral haemangiomas. J Bone Joint Surg (Br) 2007;89:495-502.

13. Fukuta S, Miyamoto K, Masuda T, Hosoe H, Kodama H, Nishimoto H. Unusual back pain caused by intervertebral disc degeneration associated with schmorl node at Th11/12 in a young athlete, successfully treated by anterior interbody fusion: a case report. Spine (Phila Pa 1976). 2009;1;34:195-8.

14. Zehra U, Flower L, Robson-Brown K, Adams MA, Dolan P. Defects of the vertebral end plate: implications for disc degeneration depend on size. Spine J. 2017;17:727-7.

15. Park H J, Kim S, Lee S W, et al. Two cases of symptomatic perineural cysts (Tarlov Cysts) in one family- case report. J Korean Neurosurg Soc 2008;44:174-7.

16. Mitra R, Kirpalani D, Wedemeyer M. Conservative management of perineural cysts. Spine 2008;16:565-8.

17. Nabors MW, Pait TG, Byrd EB, AI et al. Updated assessment and current classification of spinal meningeal cysts. J Neurosurg. 1988;68:366-77.

18. Paulsen RD, Call GA, Mertagh FR. Prevalence and percutaneous drainage of cysts of the sacral nerve root sheath (Tarlov cysts). AJNR 1994;15:293-7.

19. Mortele KJ, Ros PR. Cystic focal liver lesions in the adult: differential CT and MR imaging features. Radiographics 2001;21:895-910.

20. Macedo FI. Current management of noninfectious hepatic cystic lesions: A review of the literature. World J Gastroenterol 2013;27:462-9.

21. Tuncel SA, Cagli B, Tekatas , et al. Extraspinal Incidental Findings on Routine MRI of Lumbar Spine: Prevalence and Reporting Rates in 1278 Patients. Korean J Radiol. 2015;16:866-73.

22. Lee SY, Landis MS, Ross IG, Goela A, Leung AE. Extraspinal findings at lumbar spine CT examinations: prevalence and clinical importance. Radiology 2012;263:502-9.

23. Terada N, Arai Y, Kinukawa N, Yoshimura K, Terai A. The 10-year natural history of simple renal cysts. Urology. 2008;71:7–12.

24. McHugh K, Stringer DA, Hebert D, Babiak CA. Simple renal cysts in children: diagnosis and follow-up with US. Radiology 1991;178:383-5.

25. Laucks Jr SP, McLachlan MSF. Aging and simple renal cysts of the kidney. Br J Radiol 1981;54:12-4.

26. Konnak JW, Grossman HB. Renal cell carcinoma as an incidental finding. Journal of Urology 1985;134:1094-6.