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# **RESEARCH ARTICLE**

# INCIDENCE OF INCIDENTAL FINDINGS ON MRI SPINE AND PATIENT BENEFITS : SEE BEYOND FIELD OF VIEW.

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#### **ABSTRACT:**

Our Concern of MRI field of view (Fov) is mainly related with the optimum image quality with Maximum Fov, so that we can easily appreciate the extra spinal incidental findings at MRI spine in the general population.

Our main aim is to determine the prevalence of clinically and non clinically relevant extra spinal incidental findings in patients undergoing MRI study of spine and to mention and evaluate the undetected findings in radiological reports. (2)

Keywords : MRI, Fov, incidental finding, pixel width

#### **INTRODUCTION**

Incidental findings at imaging of MRI spine are those abnormalities that are unexpectedly discovered and are unrelated to the purpose of examination. Detection of such findings also help in proper management of patients due to complete diagnosis.

Fov is defined as the size of two or three dimensional spatial encoding area of the particular image . Usually it is defined in units of mm square . The Fov is square image area that contains the object of interest to be measured or viewed . It also refer the distance ( in Cm or mm ) over which an image of MR is acquired or displayed .

The Fov is typically divided into several hundred picture elements (pixels) each approximately 1 mm square in size. It also refers the distance over which an image of MRI is acquired or displayed for reporting (1).

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Above figure showing inverse relationship between spacing of data sample and image Fov and inverse relationship between pixel width and range of sample space frequencies

#### **MATERIALS & METHODS :**

MRI was performed on a 1.5 tesla MR imaging unit (Avanto Siemens). MRI protocols conducted are as sagittal spin echo T2W, T1W1, coronal STIR, axial and gradient sequence used in addition in post traumatic patients. Common slice thickness used is 2/3/4 mm and common Fov used are 32x32 cm / 25x19.5 cm etc. depending on the region of interest.

A group of around three hundred patients undergoing, MRI of spine during period of January 2017 to June 2017 was studied. MRI examinations and their spinal or extra spinal abnormalities were classified according to the system involved like respiratory system, urinary system, musculoskeletal system, gynecological conditions and congenital variations.



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Distribution of incidental, extra spinal pathological findings on 300 spinal examinations.

NO	EXTRA SPINAL PATHOLOGICAL FINDINGS	NUMBER PATIENTSOF
1	RENAL CORTICAL AND PARA PELVIC CYSTS	38
2	OVARIAN AND FOLLICULAR CYSTS	27
3	UTERINE ABNORMALITIES	11
4	ABNORMALITIES IN RENAL SIZE	11
5	KIDNEY MASS LESIONS	10
6	STRUCTURAL UTERINE ABNORMALITIES	5
7	HEPATIC MASS LESIONS	7
8	NABOTHIAN CYSTS	6
9	CHEST FINDINGS	10
10	BRAIN FINDINGS	5
11	ADENOIDS AND PARA NASAL SINUS	20
12	SALIVARY GLAND ABNORMALITIES	5

#### **RESULTS :**

By means of structural approach used the extra spinal findings were detected in around fifty percent of patients, some of them are specific and significant.

Chronic and non specific neck or low back pain is the commonest chief complaint of the patients referred for MRI study of spine. Cause of Pain may include from any connective tissue injury to any other etiology like underlying infective or neoplastic cause. It is important to differentiate non specific cause of pain from specific cause because the treatment mode differ considerably.

Most frequently observed incidental extra spinal pathologies include renal cystic disease, renal mass, structural and positional abnormalities of genital – urinary system. Fig 3a and 3b show adult polycystic kidney disease and presented with complaint of backache.



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fig. 3a & b adult polycystic kidney disease .



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fig.4a large cortical renal cyst in lower pole region



fig. 4b lumbar myelogram showing multiple renal cysts and extradural block in lumbar region .



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fig. 5 lumbar myelogram showing obstructive uropathy on left side . It also reveal right perinephric collection , case turned out to be renal tuberculosis .

fig. 6 lumbar myelogram showing neurogenic urinary bladder with diverticuli



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fig. 7a absent left kidney in renal fossa . fig. 7b ectopic located kidney in pelvic region , fig. 7c ectopic located kidney in presacral region .



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fig. 8 right renal hypoplasia.



fig. 9 malrotation of right kidney.



fig. 10 malrotaion of left kidney. hydronephrosis.



fig. 11 left kidney showing



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fig. 12 right renal mass with secondary in spine.



fig. 13 absent kidney in left renal fosa.

Second common group of patients include extra spinal abnormalities involving uterus , adnexa , both ovaries , structural abnormalities and physiological cysts .



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fig. 14 simple ovarian cyst on right side.



fig. 15 lumbar myelogram showing simple cyst on left .



fig. 16 nabothian cysts in cervix.



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fig. 17 bicornuate uterus.



fig. 18 fibroid in the uterus. sac.

fig. 19 hyperintense collection in the scrotal



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fig. 20 fibroid in the anterior myometrium of uterus. with







cystic lesion in the thyroid .



fig. 22a post contrast mri show nerve sheath tumor abutting left brachial plexus .

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fig. 22b axial section showing enhancing nerve sheath tumor.



fig. 23 increased bone density. compromised



fig. 24 adenoid hypertrophy with

nasopharyngeal airway.



fig. 25 coronal section showing changes of plexiform neurofibrometasis on left side.



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fig. 26 changes of empty sella.



fig. 27a focal hyperintensity in jenu of corpus callosum.



fig. 27b confirmed on MRI , DWI sequence Volume 6, Issue 2, 2017



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fig. 28 opacification of sphenoid sinus.



fig. 29a image showing right vertebral artery hypoplasia.



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fig. 29b neck angiography showing four branches from arch of aorta.



#### fig. 29c angiogram showing left vertebral artery origin from arch of aorta.

Another common group of patients show extra spinal findings include thorax, lung parenchyma, pleural effusion, fibrotic infiltrates, hemothorax and secondaries. Some cases of localized gluteal region collection also detected as cause for pain most likely secondary to intramuscular injection in recent past.



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fig. 30 left apical mass lesion .



fig. 31 multiple hepatic metastasis , marrow edema spine and altered signal intensity in iliopsoas muscle.



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fig. 32right pleural effusion with solitary nodule .

fig. 33 left sided hydrosalphinx.



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fig. 34 glenolabral injury on right side. nerve

fig. 35b axial T1W1 image showing lipoma.



fig. 35a lipoma displacing brachial plexus





fig. 36a arachnoid cyst in posterior

herniation through foramen

magnum.

fossa with

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fig. 36b arachnoid cyst in posterior fossa .



fig. 37 incidently detected bilateral hemothorax.



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fig. 38 post traumatic lung contusions on either side. fig. 39a dermoid cyst in submental region.



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fig.39b sagittal T2W1 image showing submental cyst. fig. 39c T1W1 image showing dermoid cyst in submental region.



fig. 40 consolidation in right lower lobe.

fig. 41a left parotid gland complex cystic lesion.



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fig. 41b T1W1 image, cyst in parotid gland. coronal fig. 42 left gluteal region abscess seen on

STIR image.

#### **DISCUSSION:**

Some of the incidentally detected extra spinal findings have significant clinical importance and require immediate treatment. Early recognition and treatment of some urological pathologies as hydronephrosis, renal cell carcinoma, are important in order to avoid the long term risk of renal damage. Whether or not reporting incidental extra spinal



findings by the radiologist has great positive or negative results In terms of patient health. Sometimes it might cause unnecessary further examinations, or sometimes might help to save the patient's life.

Thus with all above findings and results it is one of the duties of the radiologist to mention the incidental findings in the report with sufficient differential diagnosis.

#### **CONCLUSION:**

In conclusion after study of group of patients of MRI spine it is important for a radiologist , concern physician , patient and management of the treatment that while reporting about primary findings of vertebral discs and concern pathology it becomes equally important to pay attention to extra spinal findings , congenital anomalies or any significant anatomical variation. They should be included in the reports since they will give additional and valuable information regarding patient management

#### **REFERENCES:**

- 1. MRI questions and answers in MRI by Allen D Elster MD, FACR, Division of radiologic sciences , Wake forest school of medicine NC.
- 2. Extra spinal incidental findings at lumbar spine MRI in the general population: a large cohort study insights imaging 2013 June 4 (3) 301-308.
- 3. Rampinelli C , Mniglio M etc . Extrapulmonary malignancies detected at lung cancer screening radiology 2011: 261-293-9 (pubmed).
- 4. Incidental findings on brain and spine imaging in children . Cormac O , Maher , Joseph H , Piat H . Section on neurologic surgery . pediatrics, April 2015 volume 135 / issue 4.
- 5. 'The spine Journal ', Oct 2015 , volume 15 , issue 10 pages 197- 198. 'Incidental extra spinal findings in lumbar spine MRI : Incidence and clinical significance.

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