



## 일차진료 의사가 하지 말아야 할 진료 (근거중심)

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### I. 일차진료에서 요통

#### Back pain

- 외래에서 가장 흔히 보는 질환 중 하나
- 병력 청취, 진찰을 통해 Red flags 를 감별
- 다른 원인의 통증?

### Differential Diagnosis of Low Back Pain

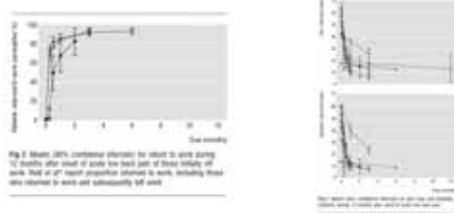
Mechanical Low Back or Leg Pain (97%)†	Nonmechanical Spinal Conditions (1%)	Visceral Disease (2%)
<b>Lumbar strain or sprain</b> (70%)‡ Degenerative processes of disc and facets (usually related to age) (10%) Herniated disc (4%) Spinal stenosis (3%) Osteoporotic compression fracture (4%) Spondylolisthesis (2%) Traumatic fractures (1%) Congenital disease (1%) Severe kyphosis Severe scoliosis Transitional vertebrae Spondylolysis § Internal disc disruption or discogenic back pain Presumed instability**	Neoplasia (0.7%) Multiple myeloma Metastatic carcinoma Lymphoma and leukemia Spinal cord tumors Retroperitoneal tumors Primary vertebral tumors Infection (0.01%) Osteomyelitis Septic discitis Paraspinal abscess Epidural abscess Shingles Inflammatory arthritis (often HLA-B27 associated) (0.3%) Ankylosing spondylitis Psoriatic spondylitis Reiter syndrome Inflammatory bowel disease Scheuermann disease (osteochondrosis) Paget disease	Pelvic organ involvement Prostatitis Endometriosis Chronic pelvic inflammatory disease Renal involvement Nephrolithiasis Pyelonephritis Perinephric abscess Aortic aneurysm Gastrointestinal involvement Pancreatitis Cholecystitis Penetrating ulcer

Jarvik JG, Deyo RA. Diagnostic evaluation of low back pain with emphasis on imaging. Ann Intern Med. 2002;137:586-97

### Natural course of back pain

- 요통 환자의 대부분은 발생 수주 내에 회복
- Disc herniation의 대다수는 발생 2개월 이내에 흡수되거나 작아진다

- Systematic review : 15개의 연구
  - 1개월 이내 (score 감소 : %)
    - pain improvement (58%)
    - disability improvement (58%)
    - return to work (82%)
  - 3개월 이후 더욱 호전



Pengal LH, Herbert RD, Maher CG, Refshange KM. Acute Low Back Pain. A Systematic Review of its Prognosis. BMJ 2003;326 (7401):323.

## Red flags in back pain

- Severe or progressive neurologic deficit
  - bowel or bladder function, saddle anesthesia
- Fever
- Sudden back pain with spinal tenderness
  - hx of osteoporosis, cancer, steroid use
- Underlying serious medical condition
  - cancer

Next step?



## 얼마나 Routine imaging 을 하는가?

- 미국 가정의학과 의사/내과 의사의 routine imaging
  - 40%/13%

Di Iorio D, Henley E, Dougherty A. A survey of primary care physician practice patterns and adherence to acute low back problem guidelines. Arch Fam Med 2000;9:1015-21.

- Radiculopathy 여부에 따라 routine imaging
  - 있을 때/없을 때 : 62%/23%
  - 있을 때 MRI 촬영 증가

Webster BS, Courtney TK, Huang YH, Matz S, Christiani DC. Physicians' initial management of acute low back pain versus evidence-based guidelines. Influence of sciatica. J Gen Intern Med. 2005;20:1132-5. [PMID: 16423103]

## Information from routine lumbar imaging

- The anteroposterior and lateral views
  - alignment
  - disc and vertebral body height
  - gross assessment of bone density and architecture
  - soft tissue structures are not evaluated extensively
- Oblique views
  - pars interarticularis in profile
  - useful for diagnosing spondylolysis (clinical evidence)
- Other special views
  - flexion and extension views : instability
  - angled views of the sacrum : SI joints for AS

## Routine Imaging 의 문제점

1. 발견되는 병변의 임상적 중요성이 낮다
2. 이상소견이 치료 계획/결과 에 주는 영향
3. 불필요한 수술/시술의 증가
4. Radiation
5. Patient Labeling

## Imaging 에서의 이상 소견?

- x-ray에서의 이상소견은 요통이 없는 사람에서도 흔하다

- 요통이 없는 사람에서
  - MRI/CT에서 병변이 다수 관찰됨

- 허리통증이 발생하기 전, MR image에서 이상 소견을 보인 환자
  - 84%(43/51)는 병변이 변화가 없거나 증상 호전

Van Tulder MW, Assendelft WJ, Koes BW, Bouter LM. Spinal radiographic findings and nonspecific low back pain. A systematic review of observational studies. Spine (Phila Pa 1976). 1997;22:427-34.

Table 4. Studies of Lumbar Spine Imaging in Asymptomatic Adults\*

Test	Reference	Patients	Age	Prevalence of Asymptomatic Conditions				
				Recurrent Disc	Bridge Disc	Degenerative Disc	Stenosis	Facet Joint
Plain radiography	42	142	16-79	31		30		
MRI	43	142	< 40 y	30			9	
		27	> 40 y	27				
	44	98	Mean, 42	9	44			
	45	93	< 50	22	34	46	1	
	46	14	< 50	36	75	89	21	
	47	98	Mean, 42	29	52		7	14
	48	22	46	Mean, 38	79	81	88	
	49	47	47	Mean, 38				
	50	48	36	Mean, 42	33	84	58	50
	51	48	43	Mean, 39	76-80	77-78	73	19-25
	52	93	58	Mean, 47				24
	53	23	1-68	Mean, 54	38	64	81	10

\* CT = computed tomography; MRI = magnetic resonance imaging.

† One-four patients had disc bridge protrusion, or stenosis only. 1% had stenosis.

‡ Four patients had severe disc compression; 27% had mild or no severe disc displacement.

§ None had stenosis.

|| Six patients had stenosis; 1% had severe disc compression.

Jarvik JG, Deyo RA. Diagnostic evaluation of low back pain with emphasis on imaging. Ann Intern Med. 2002;137:586-97.

- 6개 RCT 연구의 메타분석 : 1804명
- underlying condition이 의심되지 않는 acute/subacute LBP 환자
- Imaging vs routine care without imaging group Pain, Function, QOL, Overall improvement 차이가 없었다

Chou R, Fu R, Carrino JA, et al. Imaging strategies for low-back pain: systematic review and meta-analysis. Lancet. 2009;373:463-472.

- LBP 246명 환자
- MRI 를 촬영하고 6주 후 50% 증상호전?
  - 결과 알려준 군 : 55/115 (60%)
  - 알려주지 않은군 : 57/131(67%)
- 두 군간의 차이가 유의하지 않음 (P=0.34)

Modic MT, Obuchowski NS, Ross JS et al. Acute low back pain and radiculopathy: MR imaging findings and their prognostic role and effect on outcome. Radiology 2005;237 (2):597-604.

- LBP 환자 380명 RCT
  - Rapid MRI vs routine radiography
  - Lumbar spine surgery : 10명 vs 4명 (risk difference, 0.34 [95% CI, 0.06 to 0.73])

Jarvik JG, Hollingworth W, Martin B, Emerson SS, Gray DT, Overman S, et al. Rapid magnetic resonance imaging vs radiographs for patients with low back pain: a randomized controlled trial. JAMA. 2003;289:2810-8.

- 직업관련 Acute LBP 환자
- 첫 1개월에 MRI 촬영 군에서 수술 비율 8배, 비용 5배

Webster BS, Cifuentes M. Relationship of early magnetic resonance imaging for work-related acute low back pain with disability and medical utilization outcomes. J Occup Environ Med. 2010;52:900-7.

Table 1. Average Effective Radiation Doses of Medical Imaging Procedures

Procedure	Average effective radiation dose (mSv/verb)	No. of posteroanterior chest radiographs resulting in same effective dose
<b>Diagnostic plain films and fluoroscopy*</b>		
Barium enema (includes fluoroscopy)	8	615
Intravenous urography	7.8	600
Diagnostic cardiac catheterization	7	538
Upper gastrointestinal series	5	385
Endoscopic retrograde cholangiopancreatography	4	308
Lumbar spine radiography (three-view)	1.5	115
Abdominal series	0.7	54
Hip radiography	0.7	54
Mammography	0.2	15
Chest radiography (posteroanterior and lateral)	0.1	8
Dual energy x-ray absorptiometry	0.04	3
Chest radiography (posteroanterior only)	0.013	1
Dental panoramic radiography	0.012	1

Crownover BK, Bekko JL. Appropriate and safe use of diagnostic imaging. Am Fam Physician. 2013;87(7):494-501.

- 여성
- Gonad 위치가 가까워 효과적으로 차폐가 어렵다
- Oblique view는 standard view 의 double dose
- Female gonad 의 radiation 은 Chest PA를 수일동안 찍는 것과 같은 양

## Patient Labeling

“당신은 촬영 상 이상 소견이 있는 환자입니다”

- 특정 해부학적 진단으로 Patient labeling을 하는 것이 치료 결과를 좋게 한다는 증거는 부족하다

- Low Back Pain 으로 659명 f/u
- 첫내원 시 routine imaging 촬영군 (vs 그렇지 않은 경우) 3개월 후
  - 통증 호소 (RR 1.26, 95% CI 1.00~1.60)
  - 전반적인 건강 상태의 악화
  - 의사 상담 증가 (RR 1.62, 95% CI 1.33~1.97)

Kendrick D, Fielding K, Bentley E, Kerslake R, Miller P, Pringle M. Radiography of the lumbar spine in primary care patients with low back pain: randomised controlled trial. BMJ. 2001;322(7283):400-405.

## 왜 Imaging 을 하는가?

- 환자의 요구
- 경제적 비용 부담으로 인한 환자의 만족
- 방어진료
- 시간 절약
- MR : 접근성 향상

## Diagnostic work-up for LBP

Imaging Workup	Imaging	Indication
History		
Onset		
Duration		
Location		
Character		
Aggravating factors		
Relieving factors		
Neurological symptoms		
Systemic symptoms		
Red flags		
Response to treatment		
Progression		
Stability		
Workup		
Physical exam		
Neurological exam		
Imaging		
Plain radiographs		
CT		
MR		
Interventional		
Surgery		

Chou R, Qaseem A, Snow V, Casey D, Cross JT Jr, Shekelle P, et al. Clinical Efficacy Assessment Subcommittee of the American College of Physicians. Diagnosis and treatment of low back pain: a joint clinical practice guideline from the American College of Physicians and the American Pain Society. Ann Intern Med. 2007;147:478-91.

## Summary

- Risk factor assessment can almost always identify patients who require imaging
- The prevalence of serious underlying conditions is low in patients without risk factors
- The natural history of acute low back pain is quite favorable, but patients require reevaluation if they are not better after about 1 month
- Routine imaging does not improve clinical outcomes but increases costs and may lead to potentially unnecessary invasive treatments, such as surgery
- Imaging abnormalities are extremely common, especially in older adults, but most are poorly correlated with symptoms
- In most cases, treatment plans do not change after imaging studies
- **Don't do imaging for low back pain within the first six weeks, unless red flags are present**

## II. 일차진료에서 급성 비부비동염

## Sinusitis or rhinosinusitis

- inflammation of the paranasal sinus
- Acute rhinosinusitis is further specified as acute bacterial rhinosinusitis (ABRS) or acute viral rhinosinusitis (AVRS)
- The vast majority of cases of acute rhinosinusitis (ARS) are due to viral infection
- Acute bacterial infection occurs in only 0.5 ~ 2.0% of episodes
- The most common viruses, determined by maxillary sinus puncture and aspiration, are rhinovirus, influenza virus, and parainfluenza virus

Gwaltney JM Jr. Acute community-acquired sinusitis. Clin Infect Dis. 1996;23:1209.

## Bacterial *versus* Viral

- Gold standard : sinus culture by endoscopy beyond scope of primary care
- Image ?
- Plain radiography
- CT/MR
- 무증상과 Viral infection
- 에서도 이상 소견이 흔함



• 성인 감기 환자 자원자 대상으로 CT촬영 상 이상 소견

이상소견	31명
Maxillary sinus	27 (87%)
Ethmoid sinus	20(65%)
Frontal sinus	10(32%)
Sphenoid sinus	12(39%)
Infraorbital air cell	14(45%)
Middle turbinate pneumatization	11(35%)

Gwaltney JM Jr, Phillips CD, Miller RD, Riker DK. Computed tomographic study of the common cold. N Engl J Med 1994; 330:25-30

The following any of 3 are recommended for identifying patients with acute bacterial vs viral rhinosinusitis:

- 1) Onset with persistent symptoms or signs compatible with acute rhinosinusitis, **lasting for  $\geq 10$  days** without any evidence of clinical improvement
- 2) Onset with severe symptoms or signs of **high fever ( $\geq 39^{\circ}\text{C}$  [ $102^{\circ}\text{F}$ ]) and purulent nasal discharge or facial pain lasting for at least 3-4 consecutive days** at the beginning of illness
- 3) Onset with worsening symptoms or signs characterized by **the new onset of fever, headache, or increase in nasal discharge following a typical viral upper respiratory infection (URI)** that lasted 5-6 days and were initially improving ("double-sickening")

Meltzer EO, Hamilos DL, Hadley JA, et al. Rhinosinusitis: establishing definitions for clinical research and patient care. J Allergy Clin Immunol 2004; 114:155-212.  
Meltzer EO, Hamilos DL, Hadley JA, et al. Rhinosinusitis: developing guidance for clinical trials. Otolaryngol Head Neck Surg 2006; 135:S31-80.

Meta-analyses and Systematic Reviews about antibiotic treatment

Source	Inclusion Criteria	No. of Studies (Participants)	Clinical Improvement Placebo vs antibiotics
Rosenfeld et al. <sup>5</sup> 2007	Age 12 y; acute sinusitis or rhinosinusitis of any duration diagnosed by clinical signs and symptoms or positive radiological or microbiological test results	13 Randomized, placebo-controlled Trials (3159 participants)	At 7 to 12 d 73% vs 87%
Falagas et al. <sup>6</sup> 2008	Any age; acute sinusitis or rhinosinusitis of any duration diagnosed by clinical signs and symptoms or positive radiological, microbiological, or lab results	17 Randomized, blinded, placebo-controlled trials (3291 Participants)	At 7 to 14 d 68% vs 77%
Young et al. <sup>7</sup> 2008	Age 12 y; rhinosinusitis-like complaints of any duration	9 Randomized, placebo-controlled Trials (2547 participants)	At 14 d 64% vs 71%
Ahovuo-Saloranta et al. <sup>4</sup> 2008	Adults with acute sinusitis symptoms lasting 7 to 30 d. The majority of patients presented in primary care Settings	6 Randomized, placebo-controlled trials (5 in primary care settings) (747 participants)	At 7 to 15 d 80% vs 90%

Smith SR, Montgomery LG, Williams JW Jr. Treatment of mild to moderate sinusitis. Arch Intern Med. 2012;172:510-513

EVIDENCE OF BENEFIT from antibiotics treatment

- The difference in cure or improvement rates between the placebo and antibiotic groups ranged from 7% ~ 14% higher in antibiotic groups
- At 7 to 15 days after beginning treatment, cure or improvement was statistically significantly higher in the antibiotic compared with placebo groups, but the differences between groups was small
- The rate of complications and recurrence did not differ between groups

EVIDENCE OF HARM from antibiotics

- **Side effect of drugs**
  - primarily diarrhea, cutaneous eruption, vaginal discharge, headache, dizziness, and fatigue
  - 80% more common in the antibiotic groups compared with the placebo groups
  - reported among 30% to 74% of patients treated with antibiotics
- **Increasing rates of antibiotic resistance**

Summary

Don't routinely prescribe antibiotics

- for acute mild to moderate sinusitis unless symptoms (which must include purulent nasal secretions AND maxillary pain or facial or dental tenderness to percussion) last for 7 or more days  
OR
- symptoms worsen after initial clinical improvement