

Kopsu- ja kopsuvälise tuberkuloosi käsitus

Tõendusmaterjali kokkuvõte

Kliiniline küsimus nr 3.

Kas kõigil ebaselge diagnoosiga luu-liigese haigusega kirurgiliselt ravitavatel patsientidel tuleks saata operatsioonimaterjal tuberkuloosi diagnoosimiseks mükobakterioloogilisele uuringule vs mitte saata?

Tulemusnäitajad: uuringu/testi tundlikkus ja spetsiifilisus, diagnostiline viivitus

Kokkuvõte, sh kriitiliste tulemusnäitajate kaupa

Kokkuvõte tõendusmaterjali kvaliteedist

Soovituse koostamiseks vaadati läbi 19 ravijuhendit. Ebaselge luu-liigesehaigusega patsientide operatsioonimaterjalist tuberkuloosi diagnoosimist ei käsitletud üheski ravijuhendis; luu-liigesetuberkuloosi kohta oli infot 2-s ravijuhendis. Lisainformatsiooni saamiseks teostati otsing Pubmedi andmebaasist, kust samuti teemakohaseid süstemaatilisi ülevaateid ei leitud. Leidus 1 teemaga kaudselt seotud üksikuuring

Kokkuvõte tõendusmaterjalist

Tõenduspõhist materjali antud kliinilise küsimuse kohta leida ei õnnestunud.

Luu- ja liigesetuberkuloosi kahtlusega patsientidel tuleb teostada sobivad radioloogilised uuringud (röntgenülesvõtte, kompuutertomograafiline uuring, magnetresonantstomograafiline uuring) ja võtta koldest aspiraati/peennoelbioptaat/kirurgiline bioptaat, mis saata mükobakterioloogilisele ja histoloogilisele uuringule.

Kokkuvõte ravijuhendite soovistest luu-liigestuberkuloosi diagnostika kohta

1. PHAC 2014

Kujunduurid aitavad diagnoosimisel, kuid ei ole spetsiifilised, mistõttu neid ei tohiks kasutada kindla diagnoosi püstitamisel. Stsintigraafia on luu-liigestuberkuloosi korral positiivne, viidates infektsioonile ja põletikulisele aktiivsusele. KT- ja MRT-uuringul täheldatakse lülisamba tuberkuloosi korral rinna- või nimmelülide eesosade haaratust lülide lõpp-plaadiga külgnevalt koos luuüditurse ja minimaalse skleroosiga; distsiit koos diskide hävimisega tekib alles haiguse hilisfaasis; esineb suuri paraspinalseid abstsesse, kusjuures kaltsifikaatide esinemine neis viitab väga suure tõenäosusega tuberkuloosile. MRT aitab hästi hinnata seljaaju haaratust või kahjustust.

Nagu teistegi kopsuvälise tuberkuloosi vormide korral, tuleks diagnoos kinnitada mükobakterioloogiliselt – mikroskoopia ja külviga. Iseäranis oluline on materjali külvamisel saada andmeid tekitaja ravim tundlikkuse kohta, kuivõrd ravi jälgimine ja paranemise dokumenteerimine on luu- ja liigestuberkuloosi korral keeruline. Esmase uuringuna

soovitatakse luutuberkuloosi kahtlusel nõelbiopsiat KT kontrolli all. Saadud materjal tuleks saata histoloogilisele ja tavamikrobioloogilisele uuringule ning happekindlate bakterite mikroskoopiale ja külvile. Kui eelmainitud uuringud ei anna diagnoosi, tuleks biopsia võtta kirurgiliselt, kinnitamaks lõplikku diagnoosi ja hindamaks võimalike konkureerivate diagnooside suhtes. Oluline on patsienti uurida tuberkuloosi teiste vormide suhtes, kuna ühes hiljutises uuringus oli kolmandikul lüüsisambatuberkuloosiga patsientidest ka muude paikmete tuberkuloosi tunnuseid ning veerandil lüüsisambatuberkuloosiga patsientidest püstitati diagnoos väljastpoolt seljapiirkonda võetud materjali alusel.

Tuberkuloosne artriit on reeglina suuri koormust kandvaid liigeseid nagu puus või põlv haarav monoartriit. Teistes skeletisüsteemi paikmetes on tuberkuloos haruldane; hulgakordelist protsessi võib esineda 15-20%-l patsientidest, reeglina immuunsuprimeeritudel, kusjuures haigust võidakse tõlgendada metastaasidena. Sümptomitena esinevad turse, valu ja funktsioonipiiratus, kusjuures septilisele artriidile omaseid sümptomeid nagu punetus ja paikne temperatuuritõus reeglina ei esine; samuti ei esine üldsümptomeid. Hilisfaasis tekivad kõhreerosioonid, deformatsioon ja siinustraktid. Tuberkulooset artriiti võib esineda ka endoproteesitud liigestes.

Liigestuberkuloosile viitav radioloogiline leid on sünoovia haardatus selle paksenemise ja liigesefusiooniga, kusjuures reeglina on haaratud üks liiges. MRT-uuringul on tuberkuloosi korral näha sünoovia ühtlast mõõdukat paksenemist (vs ulatuslikum ja ebaregulaarne paksenemine reumatoidartriidi korral). Liigeselähedaste pehmete kudede abstsesside ja luuerosioonide võib esineda nii tuberkuloos, püogeense kui reumatoidartriidi korral, kuid juhul kui abstsesside on hulgi – kaks või enam – on tuberkuloosne artriit tõenäolisem. Ümbritsevate kudede fastsiiti ja tselluliiti võib esineda nii tuberkuloosi kui püogeense artriidi korral, ehkki pigem viitavad need viimasele.

Tuberkulooset artriidi diagnoosimisel on sünoviaalvedeliku hindamine mõistlik esimene samm. Sünoviaalvedeliku mikroskoopia happekindlatele bakteritele on madala tundlikkusega (19%), kuid mükobakterioloogiline külv on positiivne 79% juhtudest. Sünoviaalbiopsia koos mükobakterioloogilise külviga on 94% tundlikkusega ning võib olla vajalik, kui sünoviaalvedeliku uuringud ei ole diagnostilised.

Materjal	Külv	Mikroskoopia	GeneXpert		Histoloogia ja/või tsütoloogia	Vedeliku ADA		Rindkere Röntgen	Aktiivse kopsutuberkuloosiga %
	T	T	T	SP	T	T	SP	Hälbiv leid	
Luu peennõel-aspiratsioon	0,50-0,83	0,30-0,36	0,5	1	0,56-0,89	-	-	7	7%
Liigesvedelik	0,64-0,79	0,19	0,71	1	-	-	-		
Paraspinaalvedeliku peennõel-aspiratsioon	0,9	-	0,8	1	-				

Tabel 1. Kohandatud tabelist „Sensitivity and Specificity of Diagnostic Tests in Non-Respiratory Tuberculosis, Low HIV-prevalence“ (PHAC, 2014), T – tundlikkus, SP – spetsiifilisus

2. NICE, 2016

Luu- ja liigestuberkuloosi on orienteeruvalt 10-15% kopsuvälisest tuberkuloosist, kusjuures 50% juhtudest on lüüsisambas ja ülejäänud 50% jagunevad kõikide muude luude-liigete vahel. Muus osas korratakse juhendis suuresti Kanada ravijuhise põhjal refereeritud.

Kahtlustatud haiguskolle	Võimalikud kujunduurinud (vastavalt kahtlustatud haiguskoldele ja uurinute kättesaadavusele)	Uuritav materjal	Rutiinne uuring	Täiendavad uurinud
Luu- või liigestuberkuloos	Röntgen KT MRT	Paraspinaalse abstsessi bioptaat või aspiraat Liigesebiopsia Liigesevedeliku punktaat	Külv	-

3. NICE 2006/2011

Enamik kopsuvälise tuberkuloosi vormidest on väiksema bakterikoormusega kui kopsutuberkuloos, olles seega nn pausibatsillaarsed. Suhteliselt väiksel osal neist juhtudest on mikroskoopia happekindlatele bakteritele positiivne ja väikse bakterikoormuse tõttu võtab positiivse külvivastuse saamine kaua aega. Bioptaadi histoloogilise uuringu vastus on kopsuvälise tuberkuloosi diagnoosimisel reeglina varem olemas kui külv. Kaseossete granuloomide või Langhansi hiidrakkudega granuloomide leidmine histoloogilisel või tsütoloogilisel uuringul viitab suure tõenäosusega tuberkuloosile. Kaseosse nekroosi või Langhansi hiidrakkude puudumisel võib püüda diagnoosida kinnitada tuberkuliintesti või IGRA-ga.

Teatud kopsuvälise tuberkuloosi juhtudel ei peeta tuberkuloosi üheks võimalikuks diferentsiaaldiagnoosiks, mistõttu materjali ei saadeta külviks, vaid pannakse formaliini. See välistab bakterikülvi võimaluse, kuid happekindlate bakterite leidmisel histoloogiliselt võib siiski kasutada PCR-põhiseid diagnostikameetodeid. Tuberkuloositekitaja kiirteste tuleb kasutada biopsiamaterjalil ainult siis, kui proovimaterjal on pandud formaliini ja mikroskoopial happekindlaid baktereid näha ei ole.

Kui kopsuvälise tuberkuloos on võimalik, tuleb proovimaterjal või osa sellest kuivas anumal (mitte formaliinis!) saata külviks tuberkuloosile. Proovimaterjali all mõeldakse mis tahes kirurgilist materjali, mida saadetakse tavakülville, radioloogilistel uuringutel võetud materjali, histoloogilisele uuringule saadetavat materjali, aspiratsioonil saadud materjali.

Kuna kopsuvälise tuberkuloosi korral on positiivseid külve vähe, kasutatakse uuringutes tihti tuberkuloosi diagnoosimiseks kas histoloogilist uuringut või külvi. Negatiivse külvivastuse korral ei peeta positiivset histoloogilise uuringu vastust seega tingimata valeks. Uuringuid, milles ainult bioptaadi histoloogilise uuringu tulemuse tundlikkust võrreldi ainult külviga, on vähe ning nendes konstanteeritakse ainult kummagi testiga positiivsete patsientide hulka, mistõttu histoloogilise uuringu tundlikkust arvutada ei ole võimalik. Enamus neis uuringutes kasutatud materjalist pärineb lümfisõlmedest: ei ole teada, kas teiste proovimaterjalide korral tundlikkus ja/või spetsiifilisus erineks. Uuringuid, milles materjali külvi vastus oli negatiivne ja kopsuvälise tuberkuloosi diagnoosi kinnitamiseks kasutati bioptaadi histoloogilist uuringut või tuberkuliintesti, ei leitud.

Ravijuhendite viited

PHAC	2014
<p>Purpose. The aim of this article has been to analyze the clinical and radiological data suggesting tuberculous vertebral osteomyelitis (TVO), and then discuss the steps to be followed to achieve an aetiological diagnosis.</p> <p>Methods. A thorough literature search was carried out to identify the best clinical and microbiological evidence for a fast and efficient diagnosis of TVO.</p> <p>Results. The clinical and radiological diagnosis of spinal tuberculosis suffers from serious limitations, with a high percentage of cases requiring vertebral biopsy to reach a definitive diagnosis. The increasing incidence of multidrug-resistant tuberculosis has highlighted the insufficiency of the histopathological diagnosis and the need for microbiological diagnosis. Unfortunately, the maximum sensitivity of spinal tuberculosis cultures is 80 %, and traditional methods require 6 to 8 weeks for the isolation, identification and sensitivity study. New culture media and identification methods have improved sensitivity and reduced the time required for the identification. Molecular methods have now been integrated into a single test, with identification of the mycobacterium responsible and its sensitivity to rifampicin. Additionally, multiplex-PCR tests have been developed that allow a rapid differential diagnosis between granulomatous spondylodiscitis.</p> <p>Conclusions. All patients with subacute inflammatory back or neck pain showing suggestive radiological findings should be studied to rule out TVO. If there is no clear evidence of tuberculosis from another location or indication for surgery, a percutaneous vertebral biopsy should be performed. When TVO is suspected, all spinal or paravertebral tissue samples should be sent simultaneously to pathology and microbiology laboratories for appropriate processing.</p>	<p>Colmenero JD, Ruiz-Mesa JD, Sanjuan-Jimenez R, Sobrino B, Morata P. Establishing the diagnosis of tuberculous vertebral osteomyelitis. Eur Spine J. 2013 Jun; 22(Suppl 4): 579–586.</p> <p><i>Madala kvaliteediga süstemaatilise ülevaade</i></p>
<p>There is a clear difference between TB infection and TB. Transition from the former to the latter involves host factors and perhaps environmental elements. Currently, more individuals with immunosuppressive situations caused by aging, debilitating diseases, immunosuppressive therapies, and HIV-III infection are predisposed to secondary forms of TB. Different patterns of clinical presentation, at variance with those previously described, could result from these changes in the host. PTBA is a good example. In the present review of 52 patients, we found that patient age is rising, as has been reported in other western countries. We also found that oligoarthritis and involvement of non-weight-bearing joints is becoming more common. From the diagnostic point of view, histological studies and cultures of synovial tissue remain the most reliable tests. Awareness of these factors, recognition of changing patterns, proper use of diagnostic procedures, and early treatment should improve the outcome of patients.</p>	<p>Garrido G1, Gomez-Reino JJ, Fernández-Dapica P, Palenque E, Prieto S. A review of peripheral tuberculous arthritis. Semin Arthritis Rheum. 1988 Nov;18(2):142-9.</p>
<p>15 cases of peripheral joint tuberculosis presenting to a tertiary referral hospital are reviewed. The presentation is characterized by an insidious</p>	<p>Ellis ME1, el-Ramahi KM, al-</p>

<p>onset with a slowly progressive, painful, ankylosed or swollen monarthropathy with a mean length of history of 6.5 +/- 7 years. The knee joint was involved in 7 patients, hip in 6, elbow and shoulder 1 each. Significant systemic toxicity was absent, the white count was normal (mean 7.3 +/- 2.4 x 10⁹/l) and the erythrocyte sedimentation rate (ESR) was only slightly elevated (mean 31 +/- 23 mm/first h). Features of extra-articular pulmonary tuberculosis were present in 7 patients and periarticular findings were present (abscesses in 7 and sinuses in 4 patients). Despite a characteristic presentation, the diagnosis was initially missed in 10, leading to delay in instituting correct treatment. One patient presented with osteoarthritis and a Baker's cyst. Definitive joint arthropathy was present in all patients. The highest diagnostic yield was with a combination of synovial histology, synovial fluid culture and direct smear examination for acid fast bacilli (14 patients) and lowest if direct smear examination was used alone (2 patients). Chemotherapy with rifampicin and isoniazid alone (3 patients) or with at least 1 other drug was given for a mean of 15 +/- 5 months. Apart from debridement/drainage surgery, fusion/excision arthroplasty was performed in 6 cases and one had a total knee replacement. A heightened diagnostic acumen is needed in such cases.</p>	<p>Dalaan AN. Tuberculosis of peripheral joints: a dilemma in diagnosis. <i>Tuber Lung Dis.</i> 1993 Dec;74(6):399-404.</p> <p><i>Retrospektiivne ülevaade, täistekst puudub</i></p>
<p>Spinal tuberculosis (TB) accounts for about 2% of all cases of TB. New methods of diagnosis such as magnetic resonance imaging (MRI) or percutaneous needle biopsy have emerged. Two distinct patterns of spinal TB can be identified, the classic form, called spondylodiscitis (SPD) in this article, and an increasingly common atypical form characterized by spondylitis without disk involvement (SPwD). We conducted a retrospective study of patients with spinal TB managed in the area of Paris, France, between 1980 and 1994 with the goal of defining the characteristics of spinal TB and comparing SPD to SPwD. The 103 consecutive patients included in our study had TB confirmed by bacteriologic and/or histologic studies of specimens from spinal or paraspinal lesions (93 patients) or from extraspinal skeletal lesions (10 patients). Sixty-eight percent of patients were foreign-born subjects from developing countries. None of our patients was HIV-positive. SPD accounted for 48% of cases and SPwD for 52%. Patients with SPwD were younger and more likely to be foreign-born and to have multiple skeletal TB lesions. Neurologic manifestations were observed in 50% of patients, with no differences between the SPD and SPwD groups. Of the 44 patients investigated by MRI, 6 had normal plain radiographs; MRI was consistently positive and demonstrated epidural involvement in 77% of cases. Bacteriologic and histologic yields were similar for surgical biopsy (n = 16) and for percutaneous needle aspiration and/or biopsy (n = 77). Cultures for <i>Mycobacterium tuberculosis</i> were positive in 83% of patients, and no strains were resistant to rifampin. Median duration of antituberculous chemotherapy was 14 months. Surgical treatment was performed in 24% of patients. There were 2 TB-related deaths. Our data suggest that SPwD may now be the most common pattern of spinal TB in foreign-born subjects in industrialized countries. The reasons for this remain to be elucidated.</p>	<p>Pertuiset E1, Beaudreuil J, Lioté F, et al. Spinal tuberculosis in adults. A study of 103 cases in a developed country, 1980-1994. <i>Medicine (Baltimore).</i> 1999 Sep;78(5):309-20.</p> <p><i>Retrospektiivne uuring</i></p>

<p>We report our experience with the management of 20 patients with Pott's disease in the past 5 years, 16 of whom were admitted during the last 18 months of this retrospective study. Nineteen (95%) had a positive tuberculin skin test, and 13 (65%) had pulmonary tuberculosis. Symptoms consisted of spinal pain, weakness, sensory complaints, and flank mass in order of decreasing frequency. Ten patients were neurologically intact; the remainder had motor deficits of variable severity. The thoracic spine was involved in 13 patients, the lumbar spine was involved in 4, the cervical spine was involved in 2, and the thoracolumbar spine was involved in 1. Spinal deformity was present in 11 patients, spinal epidural compression was present in 13, and a paraspinal mass was present in 18. Operative indications included motor deficits, spinal deformity, nondiagnostic computer tomographic-guided needle biopsy, and noncompliance with, or lack of, response to medical therapy. Eleven patients underwent operations. In selected patients, early operative treatment with instrumentation, when indicated, minimizes neurological deterioration and spinal deformity, allows early ambulation, and results in excellent neurological outcome.</p>	<p>Rezai AR, Lee M, Cooper PR, et al. Modern management of spinal tuberculosis. <i>Neurosurgery</i> 1995;36:87-97.</p> <p><i>Retrospektiivne uuring</i></p>
<p>/.../ Therefore, although in many cases biopsy or culture specimens are required to make the definitive diagnosis, it is imperative that radiologists and clinicians understand the typical distribution, patterns, and imaging manifestations of tuberculosis.</p>	<p>Burrill J, Williams CJ, Bain G, Conder G, Hine AL, Misra RR. Tuberculosis: a radiologic review. <i>RadioGraphics</i> 2007;27:1255-77.</p> <p><i>Ülevaateartikkel</i></p>
<p>A retrospective study was performed in order to document the sequence and time scale of radiological changes occurring during the healing of spinal tuberculosis. 28 episodes occurred in 26 patients, of whom only two were Caucasian. All demonstrated good response to conventional chemotherapy. Soft-tissue masses increased in size for up to 1.5 months and took about 12 months to resolve. Bone destruction was seen in all cases and progressed in 70% of patients, whilst on treatment. There was loss of vertebral body height in 79%, which progressed for up to 14 months; any recovery of height was a very late feature. Sclerosis was seen at presentation in 52% and developed in most of the remaining patients within 5 months of instigating treatment. It progressed for up to 14 months and took, on average, 31 months to return to normal. Reduction in disc height was commonly seen and the vertebrae fused in three-quarters of those affected, the time of onset of fusion being very variable.</p>	<p>Boxer DI, Pratt C, Hine AL, et al. Radiological features during and following treatment of spinal tuberculosis. <i>Br J Radiol</i> 1992;65:476.</p> <p><i>Retrospektiivne uuring</i></p>
<p>/.../ Features most strongly indicative of a diagnosis of spinal tuberculosis are relative sparing of the disc space, large paraspinal abscesses, a thick rim of enhancement around the paraspinal and intraosseous abscesses, calcifications within the paraspinal collections, and a fragmentary pattern of osseous destruction. As the disease progresses, there is worsening of the osseous destruction, leading to</p>	<p>Joseffer SS, Cooper PR. Modern imaging of spinal tuberculosis. <i>J Neurosurg Spine</i></p>

collapse of the vertebral body and eventual progression to kyphotic deformity.	2005;2(2):145-50. <i>Ülevaateartikkel</i>
<p>PURPOSE: We evaluated MRI findings in active and healed proven TB spine to establish the diagnostic features.</p> <p>MATERIALS AND METHOD: Forty-nine consecutive spinal TB patients (20 male; 29 female) /.../. Pretreatment MR scans were reviewed for diagnostic features, and eight-month follow-up MR scans were reviewed for healing changes.</p> <p>RESULTS: Cervical spine (n = 6), dorsal spine (n = 14), and lumbar spine (n = 29) were affected. Fourteen had paraplegia. Mean vertebrae involved were 2.61 on X-ray with a total of 128 vertebrae (VB) and 3.2 on MRI (range, 2-15) with 161 VB. The lesions were more extensive on MRI (34.7%) than appreciated on X-ray. The disc was preserved partially or fully in 88.2% of instances. End plate erosions (159/161 VB), lost VB height (94/161), exudative lesion (158/161), granular lesion (3/161), pre and paravertebral collections (49/49 cases), marrow oedema (161/161), discitis (98%), epidural involvement (107/161), epidural spread (100/161), and subligamentous spread (156/161) were observed. Canal encroachment (10-90%) was seen in 37 cases. Mean motor and sensory scores with greater than 50% canal encroachment were 87/100 and 156/168, respectively. Cord oedema was observed in 11 cases (eight with neural deficit and three cases without). Cord atrophy was seen in one case each before and after treatment. A total of 83% of patients had a combination of paravertebral collections, marrow oedema, subligamentous and epidural extension, endplate erosions and discitis. On healing (n = 20), complete resolution of marrow oedema and collections, fatty replacement of bone marrow and resolution of cord signal intensity were observed.</p> <p>CONCLUSION: The marrow oedema, preservation of disc space, subligamentous extension of abscess, septate paravertebral abscess, epidural extension, endplate erosions and discitis were consistently observed in 83% cases of TB spine on MRI</p>	<p>Jain AK, Sreenivasan R, Saini NS, Kumar S, Jain S, Chammi IK. Magnetic resonance evaluation of tubercular lesion in spine. <i>Int Orthop</i> 2012;36(2):261-69.</p> <p><i>Retrospektiivne uuring</i></p>
/.../ This article reviews the radiologic features of diverse forms of osseous TB and the diagnostic value of the different imaging techniques. It also reviews the imaging differential diagnoses, including other infections and malignancies/metastases. Conventional radiography is of key value in the diagnosis of musculoskeletal TB. Computed tomography, magnetic resonance imaging, and bone scintigraphy also play key roles in the early detection of disease and in demonstrating the extent of disease process and soft tissue involvement. /.../	<p>Shikhare SN, Singh DR, Shimpi TR, Peh WC. Tuberculous osteomyelitis and spondylodiscitis. <i>Semin Musculoskelet Radiol</i> 2011;15(5):446-58.</p> <p><i>Ülevaateartikkel</i></p>
STUDY DESIGN: We retrospectively compared magnetic resonance images (MRIs) of tuberculous (TB) spondylitis and pyogenic	Chang MC, Wu HT, Lee CH, Liu CL, Chen TH.

<p>spondylitis.</p> <p>METHODS: We compared 22 MRI parameters in 33 patients with TB spondylitis (average age, 66 years) and in 33 patients with pyogenic spondylitis (average age, 65 years).</p> <p>RESULTS: Seventeen parameters significantly differed between the groups. The most important were local and heterogeneous enhancement of the vertebral body in all patients with TB spondylitis, diffuse and homogeneous enhancement of the vertebral body in 94% of patients with pyogenic spondylitis, vertebral intraosseous abscess with rim enhancement (TB vs. pyogenic, 79% vs. 0%), disc abscess with rim enhancement (9% vs. 64%), and well-defined paraspinal abnormal signal intensity (82% vs. 18%).</p> <p>CONCLUSIONS: Most parameters occurred in both diseases. Distinctive findings were a pattern of bone destruction with relative disc preservation and heterogeneous enhancement for TB spondylitis and a diskitis pattern (disc destruction) with peridiscal bone destruction and homogeneous enhancement for pyogenic spondylitis.</p>	<p>Tuberculous spondylitis and pyogenic spondylitis: comparative magnetic resonance imaging features. <i>Spine</i> 2006;31(7):782-88.</p> <p><i>Retrospektiivne uuring</i></p>
<p>STUDY DESIGN: A case of atypical osseous tuberculosis (TB) mimicking multiple secondary metastases on radiologic and nuclear imaging is presented.</p> <p>SUMMARY AND BACKGROUND DATA: The presence of multiple TB sites can mimic secondary metastases and biopsy remains the mainstay for final diagnosis.</p> <p>METHODS: Clinical symptoms, lab tests, and imaging data are presented. Possible diagnoses are discussed. A review of imaging characteristics in cases of typical and atypical presentations of osseous TB is proposed.</p> <p>RESULTS: A dorsal spine spondylitis was first diagnosed on a 56-year-old patient presenting neurologic deficit of the left arm. Fine needle aspiration identified bacterial infection but was negative for Mycobacterium tuberculosis. Whole-body bone scan allowed the identification of an asymptomatic sacroiliac lesion, which was accessible to biopsy and gave a final diagnosis.</p>	<p>Evangelista E, Itti E, Malek Z, et al. Diagnostic value of 99mTc-HMDP bone scan in atypical osseous tuberculosis mimicking multiple secondary metastases. <i>Spine</i> 2004;29(5):E85-87.</p> <p><i>Juhukirjeldus</i></p>
<p>OBJECTIVE: The objective of this study was to describe the magnetic resonance imaging (MRI features of tuberculosis (TB) of the knee joint.</p> <p>MATERIALS AND METHODS: The MRI features in 15 patients with TB of the knee, as confirmed by histology of the biopsied joint synovium, were reviewed retrospectively.</p> <p>RESULTS: All patients had florid synovial proliferation. The proliferating synovium showed intermediate to low T2 signal intensity. In the patients who were administered intravenous contrast, the hypertrophic synovium was intensely enhancing. Marrow edema (n = 9), osteomyelitis (n = 4), cortical erosions (n = 5), myositis (n = 6), cellulitis (n = 2), abscesses (n = 3), and skin ulceration/sinus formation (n = 2)</p>	<p>Sanghvi DA, Iyer VR, Deshmukh T, Hoskote SS. MRI features of tuberculosis of the knee. <i>Skeletal Radiol</i> 2009;38(3):267-73.</p> <p><i>Retrospektiivne uuring</i></p>

<p>were seen in the adjacent bone and soft tissue.</p> <p>CONCLUSION: Synovial proliferation associated with tuberculous arthritis is typically hypointense on T2-weighted images.</p>	
<p>The aim of this article is to present the magnetic resonance imaging (MRI features of peripheral tubercular arthritis). The clinical presentation of peripheral tubercular arthritis is variable and simulates other chronic inflammatory arthritic disorders. /.../ The MRI features of tubercular arthritis include synovitis, effusion, central and peripheral erosions, active and chronic pannus, abscess, bone chips and hypointense synovium.</p>	<p>Sawhani V, Chandra T, Mishra RN, Aggarwal A, Jain UK, Gujral RB. MRI features of tuberculosis of peripheral joints. Clin Radiol 2003;58(10):755-62.</p> <p><i>Ülevaateartikkel</i></p>
<p>OBJECTIVE: The purpose of our study was to determine the MRI findings of rheumatoid arthritis (RA) and tuberculous arthritis, with emphasis on differential diagnostic features.</p> <p>MATERIALS AND METHODS: MR images of 63 joints in 62 patients with clinically or pathologically proven RA (36 joints in 35 patients) or tuberculous arthritis (27 joints in 27 patients) were evaluated retrospectively /.../</p> <p>RESULTS: Nonuniform and greater degree of synovial thickening was more frequent in RA ($p < 0.01$); the thicker the synovial membrane, the greater the likelihood of RA ($p < 0.01$). Bone erosions of tuberculous arthritis were larger ($p < 0.01$), and the likelihood of tuberculous arthritis increased proportionally to the increment of size of the bone erosions ($p < 0.01$). Rim enhancement at bone erosion was more frequent in tuberculous arthritis ($p < 0.01$). Extraarticular cystic masses were more frequently seen and more numerous in tuberculous arthritis ($p < 0.01$).</p> <p>CONCLUSION: Uniform synovial thickening, large size of bone erosion, rim enhancement at site of bone erosion, and extraarticular cystic masses were more frequent and more numerous in tuberculous arthritis.</p>	<p>Choi JA, Koh SH, Hong SH, Koh YH, Choi JY, Kang HS. Rheumatoid arthritis and tuberculous arthritis: differentiating MRI features. AJR Am J Roentgenol 2009;193(5):1347-53.</p> <p><i>Retrospektiivne uuring</i></p>
<p>NICE</p>	<p>2006/2011</p>
<p>The aim of this study was to determine the association between the histological diagnosis of tuberculosis and the microbiological findings and to indicate how these results affect treatment. Histopathology and microbiology records were examined retrospectively. 89 cases were identified between 1984 and 1988. 67% were diagnosed as tuberculosis (TB) by both methods, 97% were diagnosed as TB or 'compatible with TB' by histology. For 7% of these the final diagnosis was found to be other than TB. 48% of patients diagnosed as TB on the basis of histology alone were treated for TB. 70% were diagnosed as TB by microbiology and treated. When matched and appropriate specimens were sent to both departments there was a</p>	<p>Cutler RR1, Baithun SI, Doran HM, Wilson P. Association between the histological diagnosis of tuberculosis and microbiological findings. Tuber Lung Dis. 1994</p>

<p>high level of agreement between histopathologists and microbiologists. There was a problem with inappropriate specimens sent to microbiology.</p>	<p>Feb;75(1):75-9. <i>Retrospektivne uuring</i></p>
<p>Of the 4172 patients in a survey of all cases of tuberculosis notified in a six-month period in England and Wales in 1978-79, 198 had a bone or joint lesion; 79 were white and 108 were of Indian subcontinent (Indian, Pakistani or Bangladeshi) ethnic origin. /.../ The spine was the most common site, and was affected in 30% of the white patients and 43% of the Indian subcontinent patients; the distribution of other sites was similar in both groups. Positive culture from a bone or joint lesion was obtained in 99 (50%) of the 198 patients (58% of white patients and 47% of the Indian subcontinent patients). Bacteriological or histological confirmation of tuberculosis either from a bone or joint lesion or from another site was obtained in 68% of the patients. /.../</p>	<p>Davies PD, Humphries MJ, Byfield SP, Nunn AJ, Darbyshire JH, Citron KM, Fox W. Bone and joint tuberculosis. A survey of notifications in England and Wales. <i>J Bone Joint Surg Br.</i> 1984 May;66(3):326-30.</p>
<p>A retrospective review of 70 cases of bone and joint tuberculosis seen between 1978 and 1987 is reported. Forty-nine of the cases were patients of Indian subcontinent ethnic origin. There was a wide range of sites affected. Pain, swelling or sinus formation were the commonest presenting features. Delay in diagnosis from the first hospital visit was significantly longer in the Caucasian population (mean delay; Caucasian 17.6 weeks, Indian subcontinent 2.8 weeks). Drug treatment was used in all cases, combined with biopsy in 21 cases and more radical surgery in 28 cases. The results of treatment were good with low morbidity and mortality, long-term problems have been few, and no relapses have occurred. Nine months of chemotherapy and the joint system of orthopaedic and medical management employed locally are strongly recommended.</p>	<p>Hodgson SP, Ormerod LP. Ten-year experience of bone and joint tuberculosis in Blackburn 1978-1987. <i>J R Coll Surg Edinb.</i> 1990 Aug;35(4):259-62.</p>
<p>NICE</p>	<p>2016</p>
<p>The aim of this study was to evaluate the diagnostic performance of an enzyme-linked immunospot (ELISPOT) assay for interferon-γ in patients with suspected skeletal tuberculosis (TB). From March 2007 to June 2010, a total of 36 patients with suspected skeletal TB in a tertiary care hospital in Taiwan were enrolled. Twelve patients (35.3%) had culture-confirmed TB, three (8.8%) patients had probable TB, and the remaining 21 (58.3%) patients did not have TB. Fourteen patients with mycobacterial infection had available biopsy or surgical specimens for histopathological examination and 12 (85.7%) specimens had pathological features consistent with mycobacterial infection. Among the 12 patients with positive findings indicating mycobacterial infection, all seven patients with spinal TB and three of five patients with TB arthritis had positive ELISPOT assays. All nine patients with spinal TB had positive ELISPOT assays, but only four of six patients with TB arthritis had positive ELISPOT assays. The sensitivity, specificity, positive predictive value, and negative predictive value for skeletal TB</p>	<p>Lai CC1, Tan CK, Liu WL, Lin SH, Huang YT, Liao CH, Hsueh PR. Diagnostic performance of an enzyme-linked immunospot assay for interferon-γ in skeletal tuberculosis. <i>Eur J Clin Microbiol Infect Dis.</i> 2011 Jun;30(6):767-71.</p>

diagnosis by the ELISPOT assay were 86.7%, 61.9%, 61.9%, and 86.7% , respectively. In conclusion, the ELISPOT assay can provide useful support in diagnosing skeletal TB, and spinal TB can be excluded based on a negative ELISPOT assay.	
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Viited kasutatud ravijuenditele

1. National Institute for Health and Care Excellence (2016). Tuberculosis.	NICE 2016
2. National Institute for Health and Care Excellence (2011). Tuberculosis: clinical diagnosis and management of tuberculosis, and measures for its prevention and control.	NICE 2006/2011
3. Public Health Agency of Canada (2014). Canadian Tuberculosis Standards, 7th Edition.	PHAC 2014

Üksikuuringud

Kokkuvõte	Viide kirjandusallikale
Retrospektiivne kirjeldav uuring 1 keskuse põhine retrospektiivne uuring Bangladeshis perioodil jaanuar 1997-august 1998. Läbi vaadatud 103 tuberkuloosi diagnoosiga kirurgilist preparaati (kirurgiliste preparaatide üldarv kirjeldamata), luutuberkuloosi diagnoos 2-1 juhul 103-st (1,9% tuberkuloosiga kirurgilistest preparaatidest).	Talukder MS, Hug MH, Haque A, Sarker CB. Extrapulmonary tuberculosis in surgical specimens. Mymensingh Med J. 2002 Jul;11(2):104-6.

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("bone/lesion"[All fields] OR "bone"[All fields]) AND ("biopsy"[All fields] OR "surgery"[All fields]) AND "tuberculosis"[All fields] AND ("systematic review"[All Fields] OR "metaanalysis"[All Fields] OR "meta-analysis"[All Fields])
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("bone lesion"[All fields] or "bone"[All fields] or "spine"[All fields] or "spinal"[All fields] or "joint"[All fields] or "osteoarticular"[All fields]) AND ("biopsy"[All fields] OR "surgery"[All fields]) AND ("tuberculosis"[All fields]) AND ("systematic review" OR "metaanalysis" OR "meta-analysis")
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("bone lesion"[All fields] OR "osteoarticular lesion"[All fields] OR "joint lesion"[all fields]) AND ("biopsy"[All fields] OR "surgery"[All fields]) AND ("diagnosis"[All fields] OR "diagnostic"[All fields] OR "algorithm"[all fields]) AND ("systematic review"[All Fields] OR "metaanalysis"[All Fields] OR "meta-analysis"[All Fields])
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("surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "surgical"[All Fields]) AND specimen[All Fields] AND ("bone and bones"[MeSH Terms] OR ("bone"[All Fields] AND "bones"[All Fields]) OR "bone and bones"[All Fields] OR "bone"[All Fields]) AND ("tuberculosis, osteoarticular"[MeSH Terms] OR ("tuberculosis"[All Fields] AND "osteoarticular"[All Fields]) OR "osteoarticular tuberculosis"[All Fields] OR ("joint"[All Fields] AND "tuberculosis"[All Fields]) OR "joint tuberculosis"[All Fields])
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((("tuberculosis, osteoarticular"[MeSH Terms] OR ("tuberculosis"[All Fields] AND "osteoarticular"[All Fields]) OR "osteoarticular tuberculosis"[All Fields] OR ("bone"[All Fields] AND "tuberculosis"[All Fields]) OR "bone tuberculosis"[All Fields]) AND ("diagnosis"[Subheading] OR "diagnosis"[All Fields] OR "diagnosis"[MeSH Terms]) AND ("surgery"[Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "surgery"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields])) AND ("loattrfull text"[sb] AND "2006/05/15"[PDAT] : "2016/05/11"[PDAT] AND "humans"[MeSH Terms] AND English[lang])
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osteoarticular[All Fields] AND ("tumour"[All Fields] OR "neoplasms"[MeSH Terms] OR "neoplasms"[All Fields] OR "tumor"[All Fields]) AND ("diagnosis, differential"[MeSH Terms] OR ("diagnosis"[All Fields] AND "differential"[All Fields]) OR "differential diagnosis"[All Fields] OR ("differential"[All Fields] AND "diagnosis"[All Fields])) AND ("surgery"[Subheading] OR "surgery"[All Fields] OR "surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical procedures"[All Fields] OR "surgery"[All Fields] OR "general surgery"[MeSH Terms] OR ("general"[All Fields] AND "surgery"[All Fields]) OR "general surgery"[All Fields])
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("epidemiology"[Subheading] OR "epidemiology"[All Fields] OR "prevalence"[All Fields] OR "prevalence"[MeSH Terms]) AND ("tuberculosis"[MeSH Terms] OR "tuberculosis"[All Fields]) AND ("surgical procedures, operative"[MeSH Terms] OR ("surgical"[All Fields] AND "procedures"[All Fields] AND "operative"[All Fields]) OR "operative surgical

procedures"[All Fields] OR "surgical"[All Fields]) AND specimens[All Fields] AND ("bone and bones"[MeSH Terms] OR ("bone"[All Fields] AND "bones"[All Fields]) OR "bone and bones"[All Fields] OR "bone"[All Fields])

21.05.2016, 5 vastet, 4 neist täistekstiga ja asjasse mittepuutuvat, 5. vaste teesidena, kuid teemakohane (vt ülalpool).