STRUČNI ČLANCI

PROFESSIONAL ARTICLES

Klinički centar Vojvodine, Novi Sad
Klinika za medicinsku rehabilitaciju
Klinika za infektivne bolesti
Medicinski fakultet Novi Sad
Zavod za fiziologiju

KLIINIČKE KARAKTERISTIKE INFEKTIVNIH SPONDILODISCITISA

Aleksandar KNEŽEVIĆ, Vesna TURKULOV, Ksenija BOŠKOVIĆ, Aleksandar KLAŠNJA, Snejana TOMAŠEVIĆ-TODOROVIĆ i Gordana DEVEČERSKI

Sažetak - Spondilodiscitis predstavlja zapaljeni proces lokalizovan u telima kičmenih pršlenova i međupršlenovskom disku. Cilj istraživanja bio je da se ustanovile subjektivne tegebe, klinički nalaz i laboratorijske karakteristike kod bolesnika sa spondilodiscitisom kao i da se utvrdi značaj magnetne rezonancije u dijagnosticisti ovog oboljenja. Istraživanjem je obuhvaćeno 40 bolesnika lećenih na Klinici za infektivne bolesti Kliničkog centra Vojvodine u periodu 2003-2007. godine. Najčešća subjektivna tegeba bio je bol u ledima (90%). Povisenu telesnu temperaturu imalo je 37,5% (χ²=2,5; p>0,05). Laboratorijski parametri zapaljenja pre početka tretmana bili su povišeni kod većine bolesnika. Dijagnoza spondilodiscitisa postavljena je na osnovu magnetne rezonancije kod 97,5% bolesnika. Sa obzirom na to da su subjektivne tegebe i klinički nalazi kod spondilodiscitisa nespecifični, kod bilo u ledima uvek treba misliti na spondilodiscitis kako bi se dijagnoza ovog teškog oboljenja na vreme postavila i započelo adekvatno lečenje. Mjerenje rezonancije pokazala se kao suverena metoda u postavljanju dijagnoze spondilodiscitisa.

Ključne reči: Spondilodiscitis; Discitis; Bakterijske infekcije; Magnetna rezonanca; Trendovi; Znaci i simptomi

Summary - Spondylodiscitis represents an inflammatory process, localized in the vertebrae body and in the intervertebral discs. The goals of this research were to identify subjective complaints, clinical findings, and laboratory characteristics in patients with spondylodiscitis, as well as to establish the importance of magnetic resonance imaging in diagnosing this disease. The data of 40 patients treated at the Clinic for Infectious diseases of the Clinical Center of Vojvodina from 2003 till 2007 were reviewed. Majority of the patients had low back pain (90%). Fever was present in 37,5% of patients (χ²=2,5; p>0,05). Laboratory parameters of inflammation were higher than normal in most of the patients before the treatment. Diagnosis of spondylodiscitis was made using MRI in 97,5% of the patients. Keeping in mind unspecific subjective complaints and clinical findings in patients with spondylodiscitis, a health professional should always suspect spondylodiscitis when back pain occurs, in order to diagnose and treat this severe disease as early as possible. Magnetic resonance imaging is the most advantageous method in diagnosing spondylodiscitis.

Key words: Spondylodiscitis; Discitis; Bacterial Infections; Magnetic Resonance Imaging + trends; Signs and Symptoms

Uvod

Spondilodiscitis predstavlja zapaljeni proces lokalizovan u telima kičmenih pršlenova i međupršlenovskom disku [1].

Spondilodiscitis se u poslednje vreme sve češće dijagnostikuju. S obzirom na dugotrajnu onesposobljenost ovih bolesnika, kao i velike troškove lečenja, ovo oboljenje, osim medicinskog, ima i veliki socijalni, i ekonomski značaj. Vezano je vezano za blagovremeno postaviti dijagnozu ovog oboljenja i pravovremenom započetak terapiju, jer se na taj način u značajnoj meri smanjuje invaliditet i mortalitet [2].

Spondilodiscitis, kao i druge infekcije kičmenog stuba, može biti izazvan bakterijama, gljivicama i parazitima mikroorganizmima [3,4].

Kada su bakterije u pitanju, smatra se da je najčešći uzročnik Staphylococcus aureus. Uzročnici mogu biti Escherichia coli i Proteus sp. kao i Pseudomonas aeruginosa i Klebsiella sp. [3-5]. Značajno mesto svakako zauzimaju i Mycobacterium sp

Introduction

Spondylodiscitis represents an inflammatory process, localized in the vertebrae body and in the intervertebral discs [1].

Lately, spondylodiscitis has been diagnosed more frequently. Considering the long-term disability of these patients and the expensive treatments, this disease having other than a medical implications, has a great social and economic significance. It is very important to diagnose this disease timely and start treatments promptly, since this is the way to reduce disability and mortality to a great extent [2].

Spondylodiscitis, as well as other infections of the spinal column, can be caused by bacteria, fungi, and parasitic microorganisms [3,4].
kao i Brucella sp kao uzročnici specifičnih spondilodiscitisa [6]. Uzročnici, mada retko, mogu biti i gljive, među kojima su najčešće Candida albicans i Aspergillus fumigatus [4, 7].

Uzročnici spondilodiscitisa do kičmenih pršljenova i diskova mogu dospeti hematogeno, najčešće arterijalnim putem preko segmentalnih arterija kičmenih pršljenova. Spondilodiscitis može nastati i posle direktnog iskorištavanja uzročnika (npr. hirurškim putem, nakon operacije medupršljenског diska).

Učestalost spondilodiscitisa u razvijenim zemljama varira od 1 na 100 000 do 1 na 250 000 ljudi, dok je u nerazvijenim zemljama znatno češći. Osobe muškog pola obolevaju 2 do 5 puta češće od osoba ženskog pola [3].

Spondilodiscitis ima tih, podmukao i nespecifičan početak koji odlazi dijagnozu, nekad i mesečima.


Kod bolešnih kod kojih je spondilodiscitis nastao postoperativno, simptomi se najčešće javljaju neko- liko dana ili nedelja nakon operacije [9]. Smatra se da postoperativni spondilodiscitisi, generalno, imaju dobru prognozu [10].

U dijagnostici spondilodiscitisa koriste se sledeće dijagnostičke procedure: radiografija (RTG) kičme, komjuterizovana tomografija (CT) kičme, magnetna rezonancija (MRI) kičmenog stuba i biop-sija kičmenog pršljenja.

MRI kičme je najosjetljivija i naj specifičnija metode u dijagnostici spondilodiscitisa - senzitivna (96%), specifična (94%) i precizna (92%) [3].

Lečenje spondilodiscitisa započinje konzervativnom antibiotikom terapijom prema antibiotigrama, kada je to moguće.

U slučaju da se ne identifikuje uzročnik, pristupa se empirijskoj terapiji koja mora biti dugotrajna i efikasna za širok spektar uzročnika. Ukoliko postoji sumnja na tuberkulozni proces, u terapiju spondilodiscitisa se uključuju i antituberkuloška [9, 11]. Parenteralna terapija nespecifičnih spondilodiscitisa obično se primjenjuje u trajanju 6-8 nedelja. Kriterijumi za završetak parenteralne antibiotičke terapije su pad sedimentacije eritrocita na polovinu ili troćinu, prestanak bolova, povlačenje neurološkog deficit a i radiološka regresija zapaljenog procesa. Pogoršanje laboratorijskih ili kliničkih znakova infek-
cije indikacija su za hitnu biopsiju i nastavak ili izmenju antibiotičke terapije [9].


Hirurški tretman indikovan je u slučajevima izostanka povoljnog terapijskog odgovora na konzervativnu (antibiotičku) terapiju, kao i u slučajevima pojave progresivnog neurološkog deficit a i pogoršanja opštih stanja bolesnika.

Cilj hirurške intervencije je da otkloni obolelo tkivo, izvrši dekompresiju nervnih struktura i obezbedi stabilnost kičmenog stuba [9,11,12].

Kod većine bolesnika povoljan ishod bolesti nastupa nakon primene konzervativne terapije, a u manjem procentu kombinovane sa hirurškom intervencijom.

Materijal i metode


U istraživanju su korišćeni podaci iz istorija bolesti, odnosno anamnestički podaci o subjektivnim tegobama bolesnika, o toku bolesti, kao i kliničkim i neurološkim nalazima. Takođe, korišćeni su rezultati dopunskih laboratorijskih analiza, kao i rezultati radioloških snimaja (RTG, CT i MRI). Praćena je vrsta i dužina trajanja terapije kao i njen uticaj na kliničke, laboratorijske i radiološke nalaze u svakoj ispitivanoj grupi bolesnika, a takođe je vršeno i njihovo međusobno upoređivanje. Efekat terapije praćen je, osim subjektivnim stanjem, kliničkim nalazom, laboratorijskim nalazima krvi, kao i nalazom MRI koja je ponajavljana na 1,5-2 meseca. Po završetku hospitalizacije pacijenti su praćeniambulantno.

Svi podaci dobijeni istraživanjem podvižniti su statističkoj obradi, uz korišćenje savremenih metoda obrade podataka (Microsoft Excel, χ2 test, t test, McNemar test, aritmetička sredina, standardna devijacija, mod). Rezultati istraživanja prikazani su tabelarno i grafički.

Rezultati istraživanja

Od 40 bolesnika obuhvaćenih istraživanjem, bilo je 27 (67,5%) osoba muškog pola i 13 (32,5%) urouw.

In cases where the origin of the disease is unknown, an empirical therapeutic approach must begin with a long lasting, wide spectrum therapy. If there is suspicion of a tuberculous process, the therapy for spondylodiscitis includes antituberculitics [9,11]. For non-specific spondylodiscitis, parenteral therapy is usually applied in duration of 6 - 8 weeks. The criteria for a completion of the parenteral antibiotic therapy are the decrease in the erythrocyte sedimentation rate by half or three quarters, cessation of pain, withdrawal of neurological deficits, and radiological regression of the inflammatory process. Worsening of the laboratory or clinical signs of infection are indications for urgent biopsies, and reasons to continue or even change the antibiotic therapy [9].

Imobilization of the spinal column is necessary, especially in the early stages of the disease. After two weeks, the idle patient in bed may begin gradual verticalization with the orthosis (corset). The orthosis is applied during the following 3 - 6 months. During the process of rehabilitation, each patient is approached differently. The patient's age, localization of the inflammatory process, disease stage, and the patient's physical and mental status are taken into consideration [8,9,11].

Surgical treatment is indicated in cases of a poor response to conservative (antibiotic) therapy, as well as in the presence of a progression in neurological deficits and deterioration of the patient's general condition.

The aim of the surgical intervention is to remove the diseased tissue, to carry out a decompression of the neural structure and to ensure the stability of the spinal column [9,11,12].

Most patients have a favourable outcome following the implementation of a conservative therapy, a lower percentage requires a combination of antibiotics and surgical interventions.

Material and methods

The research was conducted as a retrospective-prospective study. The study included 40 patients who were treated at the Clinic for Infectious Diseases, Clinical Center of Vojvodina in Novi Sad from the period of 2003 to 2007 with the diagnosis of spondylodiscitis. The diagnosis of all patients had been based on their past medical history, clinical manifestations, laboratory findings, and MRI images of the spinal column.

The study used data from case histories, i.e. anamnestic information concerning the subjective problems of the patients, the course of the diseases, the clinical and neurological findings, as well as the results from additional laboratory analysis, and the radiological results (RTG, CT, and MRI). It also listed the types and duration of therapy, its impact on the clinical, laboratory and radiological results of each group of each patient, and their comparisons.
The effect of therapy was accompanied by clinical findings, laboratory blood analysis, and repeated MRI tests every 1.5 - 2 months. After discharge from the hospital patients were monitored in an outpatient manner.

All data obtained were subjected to statistical processing, using modern methods (Microsoft Excel, χ²-test, t-test, McNemar test, arithmetic mean, standard deviation, and mode). The research results are shown in the tables and graphs.

Results

Out of 40 patients involved in the research, 27 were (67.5%) males and 13 (32.5%) females. There is a statistically significant difference regarding the sex of the patients, more men suffered from spondylodiscitis (χ² = 4.9, p < 0.05).

The patients’ ages ranged from 20 to 82. The patients were statistically analyzed by their age groups as shown in Graph 1.

The average age of patients (X̄) was 58.5 years; standard deviation SD = 15.88 years; mode = 52 years. Statistical data revealed that there was a significant difference in the frequency of the getting spondylodiscitis in different age groups (χ² = 35.27, p < 0.01).

Regardless of the etiology, majority of patients [34 (85%)] had an inflammatory process localized in the lumbar-sacral region or the spinal column, while a small number of patients had an inflammatory process localized in the thoracic and cervical part of the spinal column, 6 (15%) patients. Statistical data revealed that there were significant differences in the localization of the pathological processes (χ² = 77.8, p < 0.01).

In a large number of patients, spondylodiscitis was induced by hematogenous spreading of an infection (36 (90%) patients), while 4 (10%) patients developed spondylodiscitis as a post-operative complication of the spinal column (surgically treated intervertebral disc prolapse). There is a statistically significant difference in the way in which spondylodiscitis appeared (χ² = 25.6, p < 0.01).

In patients who had not had spondylodiscitis before the surgery, it developed within the first two months after the surgery. Subjective problems of patients are presented in Graph 2.

In Graph 2, we can clearly see that most of the patients, 36 (90%) of them complained of pain in the lumbar region. Pain of the lower extremity was present in 21 (52.5%) of the patients, 10 (25%) patients complained about the weakness in their lower extremity, 9 (22.5%) patients complained of difficulties in walking, while 9 (22.5%) were immobile.

Neck pains were present in 4 (10%) of the patients, 2 (5%) patients complained of headaches, while 2 (5%) others had subjective pains in their upper extremities.
Iz Grafikona 2 jasno se vidi da se najveći broj bolesnika žalio na bol u krstima, 36 (90%) bolesnika. Bol u nogama imao je 21 (52.5%) bolesnik, a na slabost u nogama žalilo se 10 (25%) bolesnika, teže pokretno je bilo 9 (22.5%) bolesnika, dok je 9 (22.5%) bilo nepokretno. Na bol u vratnom delu kriče žalilo se 4 (10%) bolesnika, dok su subjektivne tegobe u vidu bola u rukama i glavobolju osećali po 2 (5%) bolesnika.

Analiziran je broj obolelih od spondilodiscitis a koji su imali povišenu telesnu temperaturu, odnosno febrilnost kao znak opštega infektivnog sindroma. Povišenu telesnu temperaturu imalo je 15 (37.5%) obolelih od spondilodiscitis a dok je 25 (62.5%) bolesnika bilo febrilno. Ne postoji statistički značajna razlika između broja febrilnih i afebrilnih bolesnika obolelih od spondilodiscitis (χ²=2.5; p>0.05).

Praćene su laboratorijske vrednosti reaktanata akutne faze zapaljenja i to: sedimentacije eritrocita, C-reaktivnog proteina (CRP) i fibrinogena u krvi bolesnika obolelih od spondilodiscitis a. Analizirane su vrednosti prilikom prijema na stacionarno lečenje kao i vrednosti kontrolnih laboratorijskih nalaza koji su u toku bolničkog lečenja ponavljani na 10 dana.

Prosečna vrednost sedimentacije eritrocita pre lečenja, u prvom času, iznosila je 52.5 mm (x₁=52.5 mm/h), a nakon lečenja 33.3 mm (x₂=33.3 mm/h). Postoji statistički značajna razlika u vrednostima sedimentacije eritrocita pre i nakon terapije. Posle terapije vrednost sedimentacije eritrocita statistički je značajno niža (t=3.33; p<0.05).

Vrednosti fibrinogena bile su povišene kod većine bolesnika pre započinjanja lečenja.Prosecna vrednost fibrinogena u krvi pre lečenja bila je 5.5 g/l (x₁=5.5 g/l), dok je nakon lečenja iznosila 3.79 g/l (x₂=3.79 g/l). Poredenjem vrednosti fibrinogena u krvi pre i nakon sprovedene terapije utvrđena je statistički značajna razlika, nakon terapije vrednosti fibrinogena statistički su bile značajno niže (t=5.48; p<0.001).

Vrednosti CRP pre i nakon lečenja prikazani su na Grafikonu 3. Poredenjem vrednosti CRP pre i nakon sprovedene antibiotičke terapije dobijena je statistički značajna razlika (X₃₅N=7,69; p<0.05).

Grafikon 3. Vrednosti C-reaktivnog proteina pre i posle sprovedenja konzervativnog lečenja
Graph 3. C-reactive protein before and after conservative treatments

Grafikon 2. Subjektivne tegobe bolesnika sa spondilodiscitisom
Graph 2. Subjective complaints of patients with spondylodiscitis

We have analysed febrility as a sign of infective syndrome in these patients. Increased body temperature was present in 15 (37.5%) patients who suffered from spondylodiscitis, while 25 (62.5%) patients were afebrile. There was no significant statistical difference between the number of febrile and afebrile patients with spondylodiscitis (χ²=2.5, p>0.05).

The laboratory reactant values of the acute inflammatory phase were followed-up: erythrocyte sedimentation rate, C-reactive protein (CRP), and fibrinogen in the blood. Values were analyzed from the beginning of admission and rechecked every 10 days during their treatments.

The average erythrocyte sedimentation values before the treatment in the first hour were 52.5 mm (x₀₁ = 52.5 mm/h), and after the treatment they were 33.3 mm (x₀₂ = 33.3 mm/h). There was a significant statistical difference in the values of erythrocyte sedimentation before and after the therapy. After the therapy, the erythrocyte sedimentation values were statistically significantly lower (t = 3.33; p < 0.05).

Grafikon 4. Dijagnoza spondilodiscitis a na osnovu MRI/druge dijagnostičke procedura
Graph 4. Diagnosis of spondylodiscitis using MRI vs. other diagnostic procedure
The values of fibrinogen were increased in the majority of patients before the beginning of their treatment. The average fibrinogen value in the blood before the treatment was 5.51 g/l ($x_{\text{pre}} = 5.51$ g/l), but 3.79 g/l ($x_{\text{post}} = 3.79$ g/l) following the treatment. The values of blood fibrinogen before and after the applied therapy was found to be statistically significantly different. After the therapy, the fibrinogen values were statistically significantly lower ($t = 5.48$, $p < 0.001$).

CRP values before and after the treatment are shown in Graph 3. A comparison of the CRP values before and after the implementation of an antibiotic therapy were obtained and appeared to be statistically significantly different ($X_{\text{ McNemar}}^2 = 7.69$, $p < 0.05$) (Graph 3).

An analysis was made on the frequency of diagnosing spondylodiscitis based on the MRI findings in relation to other diagnostic methods (Graph 4). A spondylodiscitis diagnosis is made on the basis of MRI in 39 (97.5%) patients and only in one case, a pathohistological examination of the spinal disc (2.5%) was performed (Graph 4).

The Figure 1 shows MRI of patients with spondylodiscitis (Figure 1). The number of patients treated only by conservative treatments and the number of patients treated by both conservative and surgical methods were analysed. The treatment of patients was usually conducted by the application of a parenteral antibiotic therapy, with appropriate rehabilitation treatments 37 (92.5%) patients), while surgical treatment was required in 3 (7.5%) patients.

The outcome of treated patients suffering from spondylodiscitis is shown in Graph 5. In 29 (72.5%) patients, the treatment led to an improvement of the situation, while in 2 (5%) patients it resulted in death. The condition improved in a it statistically significant number of treated patients ($X^2 = 7.22$, $p < 0.01$).

Discussion

Despite the development of many scientific achievements, spondylodiscitis is a great diagnostic
dijagonalne i započinjanja terapije često dug. S obzirom na to da MRI vremenom postaje sve dostupnije bolesnicima, može se očekivati i porast broja diagnostikovanih spondilodiscitisa.

Našim istraživanjem obuhvaćeno je 40 bolesnika obolelih od spondilodiscitisa, lećenih na Klinici za infektnive bolesti u periodu od 2003. do 2007. godine. U ovom uzorku bolesnika postoji statistički značajno veći broj osoba muškog pola 67,5% (27) bolesnika u odnosu na broj osoba ženskog pola 32,5% (13) bolesnika. Prema podacima iz literature ovo oboljenje se značajno češće javlja kod osoba muškog pola u odnosu od 2:1 do čak 5:1 i 6:1 što je u skladu sa rezultatima dobijenim ovim istraživanjem [3,8,13].


Kod 10% (4) bolesnika spondilodiscitis je nastao kao komplikacija operativnog lečenja oboljenja kičmenog stuba i to nakon operativnog lečenja prolapsa međuprslenskog diska. S obzirom na to da nismo imali uvid u broj operacija kičmenog stuba za period koji je obuhvatilo ovo istraživanje, ne mogemo sa sigurnošću reći koliko je spondilodiscitis učestala komplikacija operativnog trentmana. U literaturi se mogu naći podaci koji ukazuju da je ovo veoma retka komplikacija operativnog lečenja kičmenog stuba, Mastronardi i saradnici u svom radu nalaze da se postoperativni spondilodiscitis nakon mikrosdejskomicije lumbalne kičme, kod bolesnika kod kojih je sprovedena intraoperativna antibiotika zaštita, javlja u 0,67-0,69% slučajeva operisanih bolesnika [15]. Može se zaključiti da ova, iako veoma retka komplikacija operativnog lečenja kičmenog stuba zauzima značajno mesto u ukupnom broju obolelih od spondilodiscitis.

Kod 67,5% (27) bolesnika zapaljenjski proces je bio lokalizovan u lumbalnom delu kičme. Zapaljenjski proces u L₂-S₁ lokalizaciji evidentiran je kod 17,5% (7) bolesnika, a T₁₂-L₁ kod 5% (2) bolesnika. Ukupno, to čini 90% (36) obolelih, što ukazuje na visok procenat lokalizacije procesa u nižim partijama kičmenog stuba. Postoji statistički značajna razlika u lokalizaciji patološkog procesa na kičmenom stubu ($\chi^2 = 77,8; p < 0,01$).

Tali [3], kao i Barr i saradnici [8], nalaze da je lumbalni segment najčešće zahvaćen zapaljenjskim procesom što se slaže sa rezultatima ovog istraživanja and therapeutic problem. Magnetic resonance imaging is the main diagnostic method in diagnosing Spondylodiscitis. However, it is not widely available to patients suffering from this disease, and therefore the time from the first appearance of symptoms to the time of diagnosis and the beginning of therapy is often long. As MRI becomes more accessible to patients, it can be expected that an increased number of patients with spondylodiscitis will be diagnosed.

Our research included 40 patients suffering from spondylodiscitis, treated at the Clinic for Infectious Diseases in the period from 2003 to 2007. In this sample of patients, there is a statistically significantly greater number of male 67,5% (27) of patients in relation to the number of female 32,5% (13) patients. According to data based on Tali [3], Barr [8], and other authors [13] the disease occurs significantly more often in males in a ratio of 2.1 to 5.1 and even 6.1, this being in accordance with the results obtained during this research.

The literature describes a two model distribution in relation to the age of patients. The first peak is during child development. The incidence of spondylodiscitis decreases till their 50th year. At the age of 50, the second peak arises [3,11]. Our research does not include patients younger than 18 years. The average age of patients was 58.5 years. Most patients were aged from 50-59. The youngest patient was 20 years of age, while the oldest was 80. The study found a statistically significant difference in the number of patients with spondylodiscitis amongst the different age groups ($\chi^2 = 35.27, p < 0.01$). Our results are similar to the results of Zarrouk and colleagues [14].

In 10% (4) of the patients, spondylodiscitis occurred following an operating complication in the treatment of the spinal column diseases, such as operating the prolaps of intervertebral discs. Since we did not have an insight into the number of spinal column operations for a period that was included in this study, we cannot definitely say how often spondylodiscitis had complicated the operative treatments. In literature, there is information that testifies to the fact that this is a very rare complication that can occur after an operative treatment of the spinal column. Mastronardi et al. have found that postoperative spondylodiscitis after a microdiscectomy of the lumbar spine in which an intraoperative antibiotic protection was carried out, occurs in 0.67-0.69% of the operated patients [15]. It can be concluded that this, although a very rare complication of an operative treatment of the spinal column holds a significant place in the total number of patients with spondylodiscitis.

In 67.5% (27) of patients, the inflammatory process was localized in the lumbar region of the spine. The inflammatory process was located in the L₂-S₁ location and was recorded in 17.5% (7) of patients, and in the T₁₂-L₁, found in 5% (2) of patients. In total, 90% (36) of patients had an inflammatory process localized in the lower regions of the spinal
vanja. Asamoto navodi u svom istraživanju približno isti broj oboljelih sa lumbalnom i torakalnom lokalizacijom spondilodiscitisa [16].

Vodeća subjektivna tegoba među ispitivanim bolešnicima bio je bol u slabinskom delu kičme - kod 90% (36) bolesnika, kod 52,5% (21) bolesnika bol se širio u jednu ili obe noge. Slabost nog osećalo je 25% (10) bolesnika, a 25% (10) bolesnika je bilo nepokretno. Dobijeni podaci u saglasnosti su podacima koje navode Tali [3] i drugi autori [8,11,13,18,20].

Većina bolesnika 62,5% (25) nije imala povišenu telesnu temperature niti druge znake opstog infektivnog sindroma, dok je njih 37,5% (15) imalo povišenu telesnu temperature. Ne postoji statistički značajna razlika između ove dve grupe bolesnika (v²= 2,5; p>0,05). Grupa autora iz Španije opisuje 64 bolesnika sa osteomijelitom kičmenih prskišenja, koji nije nastao postoperativno, od kojih je 80% imalo povišenu telesnu temperaturu [21], dok je kod Barbera i saradnika ovaj broj manji od 50% [18].

Pre početka terapije laboratorijski parametri zapaljenja, sedimentacija eritrocita, CRP i fibrinogen, bili su povišeni kod većine bolesnika.

Pre započetog lečenja kod 80% (32) bolesnika utvrđena je povišena sedimentacija eritrocita. Nakon sprovedenog stacionarnog tretmana povišenu sedimentaciju eritrocita imalo je 40% (16) bolesnika. Statističkom obradom apsolutnih vrednosti sedimentacije eritrocita pre i nakon terapije dobijeno je da se ove vrednosti značajno razlikuju (t=3,33; p<0,05).

Na početku lečenja kod 60% (24) bolesnika nađene su povišene vrednosti fibrinogene, da bi nakon stacionarnog antibiotikskog tretmana broj bolesnika sa povišenim vrednostima fibrinogene opao na 35% (14) bolesnika, što predstavlja statistički značajnu razliku (t=5,48, p<0,001).

Vrednosti CRP su kod većine bolesnika pri prijemu bile povišene (58% bolesnika), da bi se nakon sprovedenog konzervativnog lečenja broj bolesnika sa povišenim CRP statistički značajno smanjio na 24% (X²=7,69; p<0,05). Ovo je saglasno podacima koje u svojim radovima navode Tali [3], Grados [22] i Berbari sa saradnicima [18].

U ovom istraživanju dijagnoza spondilodiscitisa postavljena je na osnovu MRI kod 97,5% (39) bolesnika. Ovaj nalaz je u skladu sa rezultatima istraživanja i drugih autora, koji nalaze da je MRI suvere metoda u dijagnostici spondilodiscitisa [3,8,16, 18,23,24].

Kod većine, 72,5% (29), bolesnika u ovom istraživanju doslo je do smanjenja subjektivnih tegoba i poboljšanja kliničkog nalaza nakon terapije što predstavlja statistički značajan broj (v²= 7,22; p=0,01). Slične rezultate navodi Turunc sa saradnicima [6] kao i drugi autori [18,21].

column. There is a statistically significant difference in the location of the pathological process of the spinal column (v² = 77,8, p <0,01). Tali [3], as well as other authors [8] have found that the lumbar segment is most frequently affected by the inflammatory process which corresponds with the results of this research. Asamoto noted that the same number of patients had lumbar and thoracic localizations of spondylodiscitis in his research [16]. The leading subjective pains amongst the tested patients was a pain in the lumbar spine - in 90% [36] of patients, in 52,5% (21) of patients the pain spread in one or both legs. 25% (10) of patients felt weakness in their legs, and 25% (10) of patients were immobile. The data agree with the data stated by Tali [3] and other authors [8,11,13,18-20].

The majority of patients, 62.5% (25), did not have increased body temperature or other signs of a general infective syndrome, while 37.5% (15) had an increased body temperature. There is no statistically significant difference between these two groups of patients (v² = 2,5, p>0,05). The group of authors from Spain described 64 patients with osteomyelitis of the vertebrae which did not develop postoperatively, of these 64 patients 80% had increased body temperature [21], while Barbera et al. reported a number of less than 50% [18].

Before the beginning of the therapy, laboratory parameters of inflammation, erythrocyte sedimentation rate, CRP and fibrinogen, were increased in most patients.

Before the treatment began 80% (32) of patients were confirmed to have an increased erythrocyte sedimentation rate. Following a long term care treatment, 40% (16) of patients had an increased erythrocyte sedimentation rate. Statistical analysis of the absolute values of the erythrocyte sedimentation before and after the treatment obtained were different significantly (t = 3.33, p<0.05).

At the beginning of the treatment, 60% (24) of patients were found with higher values of fibrinogen. After the treatment with antibiotics, 35% (14) of patients were found with an increased fibrinogen value. This represents a statistically significant difference (t = 5.48, p<0.001).

The majority of patients admitted to the hospital were found to have increased CRP values (58% of patients). Following conservative treatment of patients, CRP values were significantly reduced to 24% (X² = 7.69, p<0.05). This is in accordance with the works by Tali [3], Grados [22], and Berbari et al. [18].

In this research, the diagnosis of spondylodiscitis was based on the MRI in 97.5% (39) of patients. These findings are in accordance with the results by Tali [3], Barr [8], Asamoto [16], Berbari [18] and others [23,24] who found that the optimal method in the diagnosis of spondylodiscitis is the use of a MRI.
During this study, the majority of patients had a reduction of subjective pains and an improvement in their clinical findings following the treatment 72.5% (29). This number is statistically significant ($\chi^2 = 7.22$, P <0.01). Similar results were found in the works by Turunc et al. [6] as well as by other authors [18,21].

In 5% (2) of patients spondylodiscitis resulted in the fatal outcome. This percentage was lower in comparison to the results achieved by Tali et al., who had noted a mortality of 18 - 31% of patients [3].

**Conclusion**

Spondylodiscitis is a disease which occurs more frequently in men. Spondylodiscitis often includes the lower segments of the spinal column (sacral and lumbar region). With the occurrence of back pain, a health professional should always think about spondylodiscitis in order to diagnose and treat this severe disease as early as possible and subsequently minimize the degree of disability in patients. Subjective pains and clinical findings in spondylodiscitis are nonspecific. Magnetic resonance imaging is the most advantageous method in diagnosing spondylodiscitis. Laboratory value parameters of an inflammation are good indicators in the course and prognosis of spondylodiscitis. A conservative therapy is usually sufficient for spondylodiscitis, and in rare cases a surgical intervention is required.

**Literatura**