

Comparison of Total Hip Arthroplasty and Core Decompression in Avascular Necrosis of the Femoral Head after Taking Temgesic and Norgesic

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Abstract

Background: Osteonecrosis is common after taking Temgesic and Norgesic. This study intended to suggest the preferable surgical treatment in osteonecrosis patients who use these drugs.

Methods: Twenty tree patients with hip osteonecrosis who were hospitalized in the Kerman hospitals after using Temgesic and Norgesic were followed for about 14 months from 2008 to 2010 (from a minimum of 2 months to a maximum of 2 years). 65% of patients underwent total hip arthroplasty (THA) and core decompression was performed for 35% of them. Patients were compared based on functional scoring of hip before and after surgery.

Findings: Duration of drug use was 38 months on average and injection frequency of drug was averagely 3 months. The average functional scoring of hip was 9.1 before operation and 16 after it ($P < 0.001$). Recovery rate of patients in THA was very good and in core decompression was good.

Conclusion: In treatment of osteonecrosis after taking Temgesic and Norgesic, the THA surgery in comparison with core decompression showed better results and caused significant clinical improvement.

Keywords: Total hip arthroplasty, Core decompression, Avascular necrosis, Temgesic, Norgesic

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Introduction

Bone necrosis is the result of imbalance between osteocyte metabolic needs and blood flow. Osteonecrosis of the femoral head regardless of its reasons shows poor prognosis, especially when it is in stages 2-4 FICAT in radiography.¹⁻⁵

Avascular necrosis of bone may occur for several reasons including fracture of femoral neck, traumatic hip dislocations, slipped epiphysis of femoral head, osteotomy of femoral neck, sickle cell anemia and other anemia, alcohol abuse, prescription of corticosteroids, rheumatoid arthritis (RA), systematic lupus erythematosus (SLE), chronic pancreatitis, arterial occlusive diseases, pregnancy, tumors, Leriche syndrome, osteomyelitis, radiotherapy, Gaucher's disease, kidney transplant, caisson, coagulation disorders, idiopathic, etc.^{3,6}

The relationship between steroid use and avascular necrosis of bone is well known.^{1-3,6} Buprenorphine, sold under the brand names of Temgesic, Orgesic, Norgesic and TDgesic in Iran which has been made and sent to the market since 1986, is a narcotic analgesic that in addition to medical and therapeutic consumption has been used widely in treatment of addiction. Although this medication is made in oral, sublingual and injectable form, only sublingual form is used in treatment of addiction. Unfortunately, some unaware drug users and even therapists used its injectable form for treatment of addiction or as an alternative for other drugs. However, the injectable form not only does not lead to addiction treatment, but also it is addictive itself and may change simpler forms of drug use (smoking and oral forms) to more dangerous form (injection). Norgesic fake ampoules have confronted us with a serious danger in Iran. This kind of Norgesic is a fake name for a substance that is formed with liquid heroin, steroids (cortisone) and pigments. It is completely formed in an unsanitary and non-standard manner then packed and put on the market in small vials. The heroin used in Norgesic ampoules is much stronger than pure morphine. Therefore, a consumer rapidly get dependent to it after using this ampoule and due to cortisone in it one would get fat quickly and feel fresh. Since most drug addicts complain impotence, by using Norgesic and its

consequent obesity, the person and his/her families think mistakenly that this ampoule is the reason of improvement and recovery. Cushing's syndrome has been reported in consumers in several cases. This substance is taken by injection and as it is rapidly excreted from the body, Norgesic consumers have to reinjection it every 3 or 4 hours to prevent withdrawal symptoms. Although Norgesic has high euphoria but it is rapidly excreted from the body and patients need to inject it frequently. In a study in Iran, the most common complication in heroin users was abscess on injection site and in Norgesic users was endocarditis. 37.5% of admitted patients in Norgesic group died. 70% of patients had fever when they were accepted for treatment and half of them had tachycardia and tachypnea.⁷

High prevalence and increasing consumption of these substances in society and subsequent osteonecrosis that mostly leads to exchange of hip joint with artificial joints, not only regarded as major surgery but also impose very heavy costs on patients. On the other hand, high prevalence of young adults and bilateral involvement impose large economic burden on society.

The Only successful treatment for advanced stage of osteonecrosis is exchange of joints. Since many cases of osteonecrosis are found in the young people and they are not good candidates for arthroplasty, other methods such as core decompression are also suggested^{6,8} and cases with complete recovery of avascular necrosis of femoral head following core decompression were reported in high stages.

All of these methods have the best outcome when they are done in early stage of osteonecrosis. Moreover, none of these studies were done about core decompression but other methods were 100% successful.^{1,2,6,9} Considering the fact that core decompression method is less invasive, the aim of this study was to compare this method of total hip arthroplasty (THA).

Methods

In this study, 27 cases of avascular necrosis of femoral head after taking Temgesic and Norgesic took part from 2008 to 2010. Three cases due to the simultaneous existence of lupus and one case due to Hodgkins' lymphoma were excluded from study. Finally,

23 cases (29 joints) were studied for the final evaluation and follow-up.

Patients were examined in terms of age, sex, duration of drug use, frequency of drug injection, the interval between being symptomatic and admission of surgery, involved side, involvement of other joints, coexistence of striae, simultaneous underlying disease, type of surgery, and method of drug taking.

Patients were randomly divided into 2 treatment groups. Since all patients under study were in stage 3 and 4 of FICAT, there was the same proportion of patients with 3 and 4 FICAT in both groups. It means that the involvement rate of femoral head and other features were the same in the two groups and just the type of treatment was different in these groups.

Patients were clinically evaluated on the basis of functional scoring hip before surgery and after surgery.⁸ This grading consists of three sections and each section has six scores. The three sections include: A) pain, B) the ability to walk and C) the ability to move joints. On this basis, patients are scored 0 to 18. Scores of 17-18 are considered excellent or very good. 16 is good, 14-15 is poor, 13 and lower is considered bad. This performance evaluation was done for patients before surgery and after follow-up subsequent to the surgery and results of before and after surgery was compared.¹⁰ Data were collected and analyzed by SPSS software version 14 using chi-square test.

Results

A total number of 29 hip joints were evaluated and followed up in 23 patients. 10 cases were left side (43.5%), seven (30%) cases were right side, and six (26%) cases were bilateral. In bilateral cases the time period of the two sides being joined was 10 months on average (from 6 months to 2 years). Fifteen cases were undergone hip total arthroplasty and 8 cases were undergone core decompression. From these 23 cases, 17 cases were found in males and 8 cases were found in females.

We had a simultaneously right and left knee avascular necrosis and one case of shoulder avascular necrosis.

Patients were followed up for 14 months on average (from 2 months to 2 years). 32% of patients (6 cases) had simultaneous striae. The mean of pain score was 1.8 before surgery and 5.6 after surgery ($P < 0.05$). The mean of mobility

score was 3.4 before surgery and 5.1 after surgery ($P < 0.01$). The mean of ability to walk score was 3.9 before surgery and 5.3 after surgery ($P < 0.01$). The mean of functional score was 9.1 before surgery and 16 after surgery ($P < 0.01$).

In the final follow up, 15 hips had very good results, 7 hips had good results and one case had average result. 82% of these cases were seen in men and 18% in women. The age range was between 17-55 years with a mean of 32.9 years. Duration of using this medicine was between 1-5 years and 3.2 years on average. Frequency of drug injection was 2-5 times per day and a mean of 3 times. 15 patients (65%) were under THA and 8 cases (35%) under core decompression. The rate of patients' clinical recovery after surgery was 12.7 in THA and 10.2 in core decompression and 11.6 on average.

Discussion

Avascular necrosis of femoral head is one of the common causes of destruction of the hip joint that leads to joint replacement. The secondary process causes ischemia and includes absorption, collapse and bone reconstruction leading to dysfunction and severe pain in hip. Supportive and non-surgical treatments are not usually helpful and in most patients leads to hip joint replacement with an artificial joint.

In recent years, following the arbitrary and improper use of drugs such as Temgesic and Norgestic in body building, addiction treatment and for the case of increase in appetite, complication of avascular necrosis has been seen with a higher incidence of disease. These drugs contain corticosteroids, buprenorphine and a pigment.

The association between steroid use and avascular necrosis of femoral head is well known as a drug complication in previous studies, but still has not been conclusively proven whether corticosteroid alone or in combination with other materials causes such complications.^{1,2,11} In the study of Koo et al., by the total average consumption of 5928 mg of steroid between 1-16 months from the onset of drug use, necrosis has been recognized.³

In the study of Oinuma et al., out of a total of 72 patients, 28 subjects were affected by necrosis in more than one joint.⁶ In addition, taking corticosteroid in a vast range of diseases such as rheumatologic and skin diseases, connective tissue disorders, cancers, etc. is

growing dramatically. In this study, by choosing patients with a mean age of 32.9 and without any underlying disease which is considered as a risk factor for osteonecrosis and also with a negative medical record except the mentioned drugs (Temgesic and Norgestic), we tried to eliminate all risk factors for osteonecrosis to reduce the possible confounding factors.

Avascular necrosis of the femoral head is averagely caused 3.2 years (38 months) after taking three Temgesic injections per day. In two review articles, osteonecrosis as a complication of steroid treatment was started 54-120 months after the onset of corticosteroids.^{1,2} Perhaps the reason of shorter latent period in the consumption of these drugs rather than corticosteroids is the accompanying materials which accelerate the emergence of this complication.

The prevalence rate of this disease in men is 82% which is justified by higher consumption of these substances by men and higher incidence of male addiction. The patients were followed up at least 2 months to maximum 2 years and for 14 months on average.

66% of patients were undergone THA and 34% core decompression. The mean functional score before surgery was 9.1 while it was 16 after it. This represents a significant clinical

improvement and is consistent with previous studies. Clinical assessment of the patients recovery rate after surgery in THA was very good (12.7) and in core decompression was good (10.2). This represents that THA was more effective than core decompression.

Conclusion

Appropriate treatment of patients with consequent osteonecrosis of taking Temgesic and Norgestic is surgery which results in remarkable clinical recovery of patients. Among the proposed surgery methods for avascular necrosis of the femoral head, THA showed better results than core decompression, therefore, it is the preferred surgical method.

Our study limitations were as follow:

1. Pretending to have low drug use by patients and the probability of hiding the truth to hide the reason of their disease;
2. Small sample size and
3. These medications contain buprenorphine and pigments in addition to corticosteroids. No studies have been conducted on the effects of these substances on osteonecrosis and it is not clear whether these substances increase the effects of corticosteroids on osteonecrosis.

Conflict of Interest: The Authors have no conflict of interest.

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مقایسه دو روش جراحی آرتروپلاستی کل مفصل لگن (THA) و حذف فشار مرکزی (Core decompression) در درمان نکروز آواسکولار سر فمور به دنبال مصرف تمجیزک و نورجیزک

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چکیده

مقدمه: استئونکروز به دنبال مصرف تمجیزک و نورجیزک شایع است. این پژوهش با هدف، بررسی و پیگیری بیماران مبتلا به استئونکروز به دنبال مصرف این داروها و تشخیص روش درمانی ارجح در این بیماران انجام شد.

روش‌ها: تعداد ۲۳ مورد استئونکروز مفصل ران که به دنبال مصرف تمجیزک و نورجیزک در بیمارستان‌های شهر کرمان بستری شده و به طور متوسط ۱۴ ماه (از سال ۱۳۸۶ تا ۱۳۸۸) مورد درمان قرار گرفته بودند، پیگیری شدند (۲ ماه تا ۲ سال). ۶۵ درصد بیماران تحت آرتروپلاستی کل مفصل لگن (Total hip arthroplasty یا THA) و ۳۵ درصد تحت حذف فشار مرکزی (Core decompression) قرار گرفتند. بیماران بر اساس نمره‌گذاری عملکردی مفصل لگن (Functional scoring of hip) قبل و بعد از عمل جراحی با هم مقایسه شدند.

یافته‌ها: به طور متوسط مدت مصرف دارو ۳۸ ماه و میانگین دفعات تزریق آن ۳ ماه بود. میانگین نمره عملکردی مفصل لگن قبل از عمل ۹/۱ بود؛ در حالی که این میانگین بعد از عمل عدد ۱۶ را نشان داد. همچنین میزان بهبودی بیماران در آرتروپلاستی کل مفصل لگن بسیار خوب و در حذف فشار مرکزی خوب بود.

نتیجه‌گیری: جراحی آرتروپلاستی کل مفصل لگن نتایج بهتری نسبت به حذف فشار مرکزی در درمان استئونکروز به دنبال مصرف تمجیزک و نورجیزک داشت و باعث بهبودی قابل توجه بیماران از نظر بالینی شد.

واژگان کلیدی: نکروز آواسکولار، آرتروپلاستی کل مفصل لگن، حذف فشار مرکزی، نورجیزک، تمجیزک

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