

Estimation of some haematological parameters and enzymes activity transaminase for some arthritis patients who used voltaren drug in AL-Ramadi city

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Abstract

Voltaren is an important nonsteroidal anti-inflammatory drug that is commonly used in both humans and animals ,this research was conducted to study the effect of voltaren drug used by some of patients with arthritis for more than a year inAL- Ramadi city, Where blood samples were collected from the patients coming to AL-Ramadi General Hospital , 50 samples were collected on average age of 55 years.

Where some of the haematological parameters and enzyme activity were estimated.The result showed that there was asignificant reduction in the count of WBC, reaching the lowest value2500 cell/ml ,and also noted a decrease in the PCVand reached its lowest value28%,accompanied by arise in liver enzymes activity(Aspartate aminotransferase AST, Alanine aminotransferase ALT), the highest value of 95 (U / L) and 94 (U / L) each, respectively

Key words: Diclofenac sodium, liver enzymes, haematological changes

Introduction

Voltaren is one of the most important medicines in common use among patients with rheumatism and arthritis, even without consulting a doctor, Voltaren classified as pharmacologic non steroidal anti-inflammatory drugs (NSAID) as theraputic non narcotic analgesic, Diclofenac sodium scientific name and the trade name Voltaren [1,2].

The structure of voltaren is C₁₄H₁₁Cl₂No₂ [3].

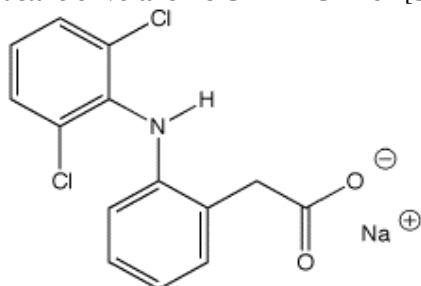


Figure (1) shows the structure of voltaren drug [3].

The advers effects of voltaren may have come to a bloody and bleeding ulcers or bleeding in the stomach or intestine [3], If the slight bleeding may lead to anemia or if a strong showing in the form of vomiting bloody and life-threatening [4]. Where the liver play an important role in dealing with drugs, the use of the voltaren drug for a long time resulting in inflammation of the liver cells and the deposition of fat, leading to an elevated liver enzymes and hepatitis[5], As well as affecting the efficiency of these drugs on the kidney, central nervous system, cardiac vascular tissue, respiratory system and the skin[5]. The most important is the liver enzyme aminotransferase (AST,ALT), these enzymes and affects in each of the skeletal muscle, heart, and kidney[6].

AST is a mitochondrial and cytoplasmic enzyme in liver,and is also present in high concentration in cardiac and skeletal muscle, kidney, pancreas and red blood cell[6].

ALT is a cytoplasmic enzyme in liver,and as it is present in a higher concentration here than in other tissues it is considered more specific for liver

damage[5]. Aminotransferase are most useful in the diagnosis(e.g. early stages on viral hepatitis) and monitoring of hepatocellular disease, but can also be very high in acute cholestatic disease(especially choledocholithiasis)[6]. Marked elevation may also be seen in acute profound hypotention and acute cardiac failure.Levels may be normal in compensated cirrhosis, chronic hepatitis C and chronic incomplete biliary obstruction[6,7].

Materials and methods

Blood was collected from some arthritis patients voltaren drug users for more than a year in AL-Ramadi General Hospital ,50 samples were collected on average age of 55 years during the period 17/1/2009to17/4/2009,the following tests were done:-

1- Estimation of packed cell volume (PCV):-

PCV was estemated using a Micro hematocrit method

2- Total white blood cell count(T WBC):-

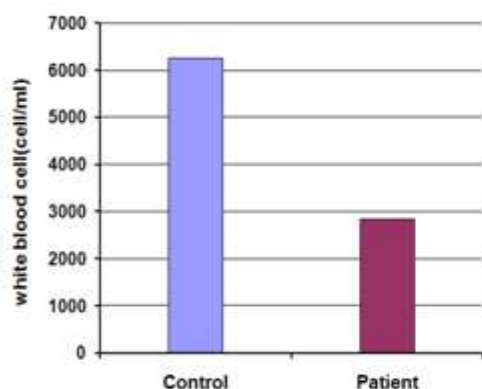
Estimated the total white blood cells using a dilluted solution(Turkeys' fluid)

3-Estimation of AST and ALT enzymes activities:-

AST,ALT enzymes activity were estimated using the kit of the French company BIOMERIEUX

Results and discussion

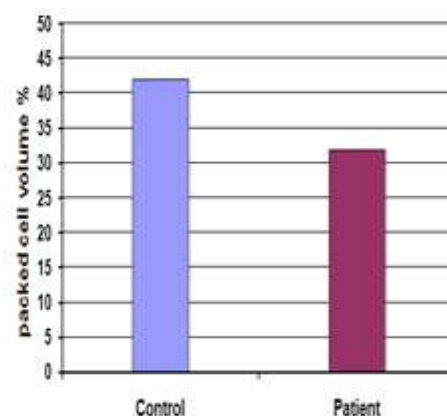
The white blood cells, is one where the major blood cell to defend the body against infectious diseases, which are part of the immune system [6]. There are some medicines that have an effect on the number and function of white blood cells including non steroidal analgesics (NSAID) and other drugs including immune suppression, such as Sirolimus [7]. The results showed that there was a decrease in white blood cells ,reached its lowest value since 2500 cell / ml accompanied by a decrease in the packed cell volume and,The lowest value 28% compared to the control samples as shown in Figure (2)(3).The reason for this may be due to infections that occur in the stomach or intestine, results from the occurrence of these infections, bleeding, or slightly bloody sharp [8]



Figure(2)Effect of voltaren drug on WBC of arthritis patient compared with control

As for the enzymes aminotransferase activity called Transaminase enzymes because it helps the transmission of the NH₂ group of amino acids to the site of α -Keto acids of ketonic acids and thus transform amino acids to α -ketonic acids, This is the transformation of the main functions of these enzymes within the human body in the metabolism of protein [6].

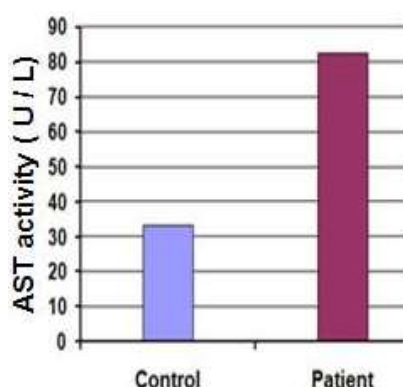
As a rough guide,AST>ALT in alcoholic hepatitis and cirrhosis, infiltrative liver disease and non-biliary



Figure(3)effect of voltaren drug on PCV of arthritis patient compared with control

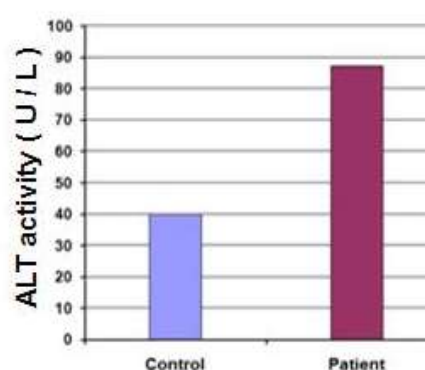
cirrhosis, while ALT>AST in viral and drug hepatitis. Chronic hepatitis C and cholestasis, AST increases in many non-hepatobiliary diseases[6].

The results of the study that there is a significant increase at 0.0001 probability level of activity of enzymes AST, ALT , After reaching its highest value for the two enzymes 95 and 94 U / L for both enzymes, respectively , compared with samples of control, as the form (4,5).



Figure(4) Effect of voltaren drug on AST activity of arthritis patient compared with control

The reason is the elevated liver enzyme activity in patients who use voltaren analgesic treatment of inflammation in the liver[9],As the effect of the drug inhibits the activity of two enzymes,The first called (Cyclooxygenase1) Cox1, which leads to a useful synthesis prostaglandins (Compounds produced an important body functions such as feeling pain, discourage the production of acid tract, stimulate the secretion of bowel mucosa, which protects the membrane lining of the digestive system and some other body cells (10,it also helps to collect the



Figure(5) Effect of voltaren drug on ALT activity of arthritis patient enzyme compared with control

platelets necessary for the process of blood clot) [11,12].

As it is the second enzyme is induced called (Cyclooxygenase2) Cox2 stimulates the synthesis of a harmful type of prostaglandins which is responsible for severe rheumatoid arthritis and hepatitis, and this showed that the voltaren drug inhibits the synthesis of the two types of prostaglandins (useful and harmful) together.

This means that the drug treats with arthritis and causes inflammation of the digestive system [10,13].

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تقدير بعض من المتغيرات الدموية وفعالية الانزيمات الناقلة للامين لعدد من مرضى التهاب المفاصل والمستخدمين لعقار الفولتارين في مدينة الرمادي

هند يونس الفهداوي

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الملخص

عقار الفولتارين هو أحد الأدوية اللاستيرويدية المضادة للالتهاب الشائعة الاستخدام لعلاج كل من البشر والحيوانات ،اجري هذا البحث لدراسة تأثير عقار الفولتارين المستخدم من قبل بعض مرضى التهاب المفاصل ولاكثر من سنة في مدينة الرمادي ، حيث تم جمع عينات الدم من المرضى الوافدين الى مستشفى الرمادي العام والبالغ عددها 50 عينة ويمعدل عمر 55 سنة، اذ تم قياس بعض المتغيرات الدموية (العدد الكلي لكريات الدم البيض WBC وحجم كريات الدم المضغوطةPCV وفعالية الانزيمات الناقلة للامين(ناقل امين اسباريتيت AST وناقل امين الانينALT) وبينت النتائج بأن هناك انخفاض معنوي في عدد كريات الدم البيض اذ بلغت ادنى قيمة2500 خلية/مل وكذلك لوحظ انخفاض في حجم الخلايا المضغوطة وبلغ ادنى قيمة لها 28% يرافقها ارتفاع معنوي في نشاط انزيمات الكبد ALT و AST وبلغت اعلى قيمة 95 و94 وحدة دولية لكل منها على التوالي.