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Review Article on Dangers of Ibuprofen

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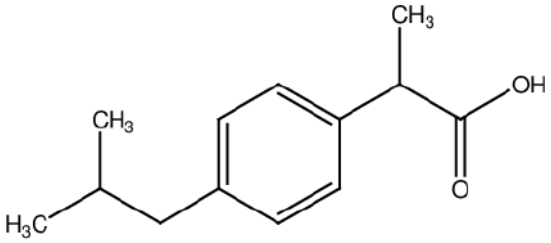
ABSTRACT: Ibuprofen is a non-steroidal anti-inflammatory drug.Ibuprofen is a less expensive NSAIDs and the most commonly prescribed by doctors. It was the first propionic acid derivative introduced as an analgesic and antipyretic for general use and as an alternative to Aspirin. It's analgesic and anti-inflammatory are considered very effective. Ibuprofen has certain drug- drug interactions (pharmacokinetic and pharmacodynamics) that need to be taken into account. Ibuprofen reduces the level ofhormones that cause pain, inflammation, swelling, and fever like other NSAIDs Ibuprofen is associated with a number of side effects.

KEYWORDS: Ibuprofen, Anti-inflammatory drug, analytical methods.

INTRODUCTION:

Ibuprofen was discovered to be the most widely used anti-inflammatory drugs by Stewart Adams in 1961. The molecular formula Ibuprofen is $C_{13}H_{18}O$= Ibuprofen was the first member of propionic acid derivatives. These drug decreases the hormones that cause pain, tenderness, stiffness and inflammation Ibuprofen is usedto treat symptoms like back pain, minor injury, common cold and headache, Ibuprofenhas a less water solubility with less than 1mg of ibuprofen dissolving in 1ml of water

.It is more soluble in aqueous alcohol mixture. Ibuprofen can give rise to a number ofside-effects besides its upsides there are some downsides of Ibuprofen , like it increase the risk of heart , kidney and liver failure at higher dosage.



Ibuprofen

STRUCTURAL FORMULA

Synonyms:

1. Calcium Salt Ibuprofen
2. I.V. Solution, Ibuprofen
3. Ibuprofen
4. Ibuprofen I.V. Solution
5. Ibuprofen Zinc
6. Ibuprofen, (+-)-Isomer

7. Ibuprofen, (R)-Isomer12. Ibuprofen, (S)-Isomer

Ibuprofen has certain drug-drug interactions [1]. It has been found that it can interferewith anti-hypertensive therapist by causing a notable rise in systolic and diastolic blood pressure and other studies have reported that Ibuprofen and aspirin competefor the binding sites on platelets, and therefore the cardio protective effects of aspirin may be blocked when Ibuprofen is administered simultaneously [2]. In somecases, it was shown that Ibuprofen may preserve pulmonary function in children withmild lung disease [3]. While another theory suggests it can increase the risk of acutebronchospasm in children suffering with asthma non prior experience of aspirin induced asthma [4].

DRUG INTERACTIONS:

Certain medications can increase your risk of having an overdose of ibuprofen. According to research, do not take any of the following medications withibuprofen without first talking with your doctor [5]:

*Selective serotonin reuptake inhibitors (SSRIs), which can interfere with themetabolism of NSAIDs while also increasing pain and bleeding.

*Antihypertensive, which are medications for high blood pressure that may increase the risk of kidney damage [6].

*Diuretics (water pills), which increase the risk of kidney failure when combined with ibuprofen.

*Lithium, which increase the risk of toxicity.

*Mixing ibuprofen with alcohol can also increase your risk of having serious sideeffects, like stomach or intestinal bleeding [7].

SIDE-EFFECTS OF IBUPROFEN:

Like most NSAIDs ibuprofen may increase the incidence of heart attacks orstrokes [8].

*Ibuprofen is generally safe, but may cause inimical reactions in some patients.

*Taking ibuprofen occasionally for pain relief, for example when you have a back painis unlikely to affect your fertility. In this case paracetamol is a better option. This is because taking ibuprofen in large dose for long time can affect ovulation which can make more difficult for those who are trying to get pregnant [9].

*Symptoms of an Ibuprofen overdose may include heartburn, nausea, vomiting,stomach pain, diarrhea, dizziness, sweating, hypertension, comma [10].

*Problems of an Ibuprofen overdose can cause severe problems in thegastrointestinal tract these include

*ulcers

* liver or kidney failure

* bleeding

*inflammation

*When you are pregnant you should not take ibuprofen unless you are doctor tells you to. Because taking an NSAIDs during the last 20 weeks of pregnancy can causesignificant heart or kidney problems in the fetus and also the possible complications with your pregnancy [11].

*Ibuprofen can make asthma symptoms worse.Effect of ibuprofen on liver:

Elevations in liver function tests are found in up to 15% of patients. The hepatic sideeffects cholestasis, hepatitis, jaundice and hepatic failure have rarely been reported. Ibuprofen has also been implicated in children with acute vanishing bike duct syndrome and in acute hepatitis c. Patients with liver disease require regular liver function tests when they are receiving ibuprofen. Ibuprofen induced hepatitis can leadto fatality [12].

Cardiovascular risk:

Along with several other NSAIDs chronic Ibuprofen use has been found correlatedwith risk of progression to hypertension in women through less than for acetaminophen, and chronically using higher doses [13].

Skin:

Along with other NSAIDs, Ibuprofen has been associated with the onset of bullous pemphigoid. Ask with other NSAIDs, Ibuprofen has been reported to be here photosensitizing agent compared to other members of the 2-arylcpropionic acid class. Ibuprofen is an extremely rare cause of the autoimmune disease Stevens - Johnson syndrome, ibuprofen is also an extremely rare cause of toxic epidermal necrolysis [14].

Nervous system:

The popular pain relieving medication ibuprofen place a role in our nervous system as the drug can also be used to treat pain caused by acid damage and to protect against certain types of brain damage caused by stroke. A prospective study lookingat Ibuprofen overdose noted that 30% of patient’s experience CNS effects ranging from drowsiness to comma. Case reports have identified numerous neurologic sequelae including ataxia,vertigo, dizziness, recurrent falls[15].

Allergic reactions

Some people may have an allergy to the ingredients of ibuprofen.

Allergic symptoms include Trusted Source: hives, change in skin color, blistering, or a rash, facial swelling, wheezing and difficulty breathing, shock, Anyone experiencingthese symptoms should stop using the drug.In severe cases, anaphylactic shock may occur, and a person will have difficulty breathing. This is life threatening and requires immediate medical attention [16].

ADVERSE EFFECT:

NSAIDs a widely used, frequently taken in appropriately and potentially dangerously. nerveless, ibuprofen exhibits few adverse effects. By for the most disturbing adverse effects of all the nonsteroidal Anti-inflammatory drugs are gastrointestinal, particularly symptoms of gastritis, and on kidney and the coagulation system. We now understand that in addition to the control exerted by the H2 receptor in the stomach's physiology is also modified by

prostaglandins. There positive presence increases protective mucous production, decreases acid secretion, and increases mucosal blood flow. When there production is inhibited, exactly opposite effects areproduced making perfect conditions for peptic ulcer formation Ibuprofen, as well as all other inhibitors of prostaglandin production, has been documented to produce ulceration, presumably by this mechanism cimetidine is said to be protective [17].

Based on clinical trial data, serious GIT reactions promoting withdrawal of treatment because of hematemesis, peptic ulcer, and serve gastric pain, vomiting showed an incidence of 1.5% with Ibuprofen was a potential cause of GI bleeding, increasing the risk of gastric ulcers and damage, renal failure, epistaxis, apoptosis, heart failur,e hyperkaliemia, confusion and bronchospasm. It has been estimated that one in fivecornice users of NSAIDs will develop gastric damage. Almost all the nonsteroidal anti -inflammatory drugs have been documented to induced edema formation, presumably due to an effect on salt and water metabolism by the kidney add enhancing effect on ADH. These effects, which can be shown to cause a significant hypervolemia, are probably related to the effect on prostaglandins. In one reported instance, congestive heart failure as resultant. Common diuretics are known to reduce edema caused by nonsteroidal anti-inflammatory drugs [18].

By far the most disturbing adverse effects of all the nonsteroidal anti-inflammatory drugs are gastrointestinal, particularly symptoms of gastritis. We now understand that in addition to the control exerted by the H2 receptor, the stomach's physiology is also modified by prostaglandins. Their positive presence increases protective mucous production, decreases acid secretion, and increases mucosal blood flow.
When their production is inhibited, exactly opposite effects are produced, making perfect conditions for peptic-ulcer formation [19]. Ibuprofen, as well as all other inhibitors of prostaglandin production, has been documented to produce ulceration, presumably by this mechanism. Cimetidine is said to be protective [20]. Despite their potent prostaglandin inhibition, the propionic-acid derivatives are much less irritating to the stomach than are other agents. Irrespective of their potency as analgesic or anti-inflammatory agents, their reduction in this adverse effect constitutes a real advance in therapeutics. Ibuprofen has between one fifth and one half the gastric irritant capacity of aspirin, depending on the doses. The relative potency of nonsteroidal anti-inflammatory drugs as prostaglandin inhibitors does not seem to be directly related to their capacity to irritate the stomach, which suggests some differential effects on the production of the end products of arachidonic-acid oxidation. In some instances, diarrhea has been a complaint and in others, constipation. Ibuprofen has, however, been used to control idiopathic diarrhea.

Originally, some cases of direct retinal or optic nerve toxicity were reported to be related to ibuprofen therapy [21]. Later, more definitive prospective studies tended todeny this finding [22], but prudence would dictate withdrawing the drug at any sign ofreduced visual acuity. Almost all the nonsteroidal anti-inflammatory drugs have been documented to induce edema formation, presumably due to an effect on salt and water metabolism by the kidney and an enhancing effect on ADH. These effects, which can be shown to cause a significant hypervolemia, are probably related to theeffect on prostaglandins. In one reported instance, congestive heart failure has resulted [23]. Common diuretics are known to reduce edema caused by nonsteroidal anti-inflammatory drugs. There have been isolated reports of bone marrow and hepatic toxicity, which must be very rare, and as with all drugs a certain low incidenceof rash is produced. Several instances have been reported of a sterile meningitis [24] and a nonspecific febrile reaction [25] to ibuprofen in systemic lupus erythematosus. These must also be very rare [25]. patient with lupus erythematosus treated for 9 months with daily doses of 1600 to 3200 mg of ibuprofen suddenly develop meningitis, which was found to be

due to Cryptococcus. Although, as noted above, the effect of ibuprofen on blood clotting mechanisms is weak, one would be wise to exercise caution when concurrently treating a patient with coumarin derivatives. Eventhough there is no direct interaction with coumarins per se, the irritative effect on the stomach and the inhibition of secondary platelet aggregation could be associated with severe gastrointestinal hemorrhage. The bleeding and clotting times of hemophiliac patients, however, are reportedly unaffected [25].

HUMAN TOXICITY EXCERPTS

*Young women taking Ibuprofen for systematic lupus erythematosus discontinuedtherapy: on reinstitution of therapy, profound hypotension and headaches developedwithin HR.

*Fatal autoimmune hemolytic anemia occurred coincident with oral admit of Ibuprofen 400MG3 times/day in 49-YR old male[25].

CONCLUSION:

Ibuprofen is a mild but effective anti-inflammatory and analgesic drug who Salient clinical property is reduced symptoms of gastric irritation. Ibuprofen has been discussed in all its aspects in this review. The advantages of a drug like Ibuprofen far outweigh the drawbacks it may have. However, further optimization can be definitely achieved. At the moment many NSAIDs are still used as race mates (whichmay be the source of the side effects that can manifest in some cases)due to the difficulty of the separation and the cost it incurs.

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