A Realistic Case Confirming the Significance of Clinical Pharmacist Role Inside Community Pharmacies

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Introduction

Pain management remains a cornerstone of healthcare, with nonsteroidal anti-inflammatory drugs (NSAIDs) playing a vital role in mitigating pain and inflammation. However, the therapeutic effectiveness of these medications can be overshadowed by a significant threat: drug-drug interactions (DDIs). DDIs occur when the administration of one medication alters the pharmacokinetics or pharmacodynamics of another, potentially leading to adverse effects, reduced efficacy, or even life-threatening complications. The prevalence of DDIs is a growing concern, particularly in the context of polypharmacy, where patients are prescribed multiple medications concurrently. This trend is especially pronounced with analgesics, as patients often require a combination of pain relievers to address diverse pain types and severities. Understanding the specific prevalence of DDIs involving combined analgesics remains an ongoing challenge. Literature reports vary significantly, with estimates ranging from a few percent to upwards of 20%, depending on the study population and methodology. However, the potential for severe consequences highlights the need for a closer examination of this issue.

Nonsteroidal anti-inflammatory drugs (NSAIDs) are a mainstay in pain management, offering patients relief from pain, inflammation, and fever. Diclofenac and ketorolac are two commonly prescribed NSAIDs, each with well-established efficacy for various musculoskeletal condition. However, their use is not without risks. NSAIDs can cause a spectrum of adverse effects, most notably gastrointestinal (GI) complications such as ulceration and bleeding (1). This risk is significantly amplified when these medications are used concurrently. Despite clear contraindications, cases of inadvertent co-administration of diclofenac and ketorolac have been reported, often leading to serious adverse events.

One day, A woman came to Doctor Samir Osman Community Pharmacy in Egypt, and she said" I have injected my husband intramuscularly combined syringe of Voltaren® 75 mg /3 ml amp. And Ketolac® 30 mg/ 2 ml amp." She was afraid and asking if this could lead to a serious medical condition."

The active pharmaceutical ingredient (API) of Voltaren® is diclofenac sodium (Figure 1). Diclofenac sodium, a non-selective non-steroidal anti-inflammatory medication (NSAID), has long been used to treat acute pain and inflammation, and it is helpful in a variety of acute pain conditions (2). Diclofenac's possible mechanisms of action include inhibiting leukotriene synthesis, inhibiting phospholipase A2, modulating free arachidonic acid levels, stimulating adenosine triphosphate-sensitive potassium channels via the L-arginine-nitric oxide-cyclic guanosine monophosphate pathway, and centrally mediated and neuropathic mechanisms. Other emerging mechanisms of action may include suppression of peroxisome proliferator activated receptor-c, decrease in plasma and synovial substance P and interleukin-6 levels, blockage of the thromboxane-prostanoid receptor, and inhibition of acid-sensing ion channels (3).

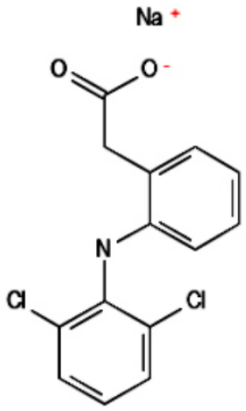

Figure 1. Chemical structure of diclofenac sodium salt.

The active pharmaceutical ingredient (API) of Ketolac® is ketorolac tromethamine (Figure 2). Ketorolac is a non-selective nonsteroidal anti-inflammatory medication (NSAID) that is useful in treating moderate to severe pain. It inhibits the formation of prostaglandins. It has moderate anti-inflammatory and strong analgesic properties. (4).

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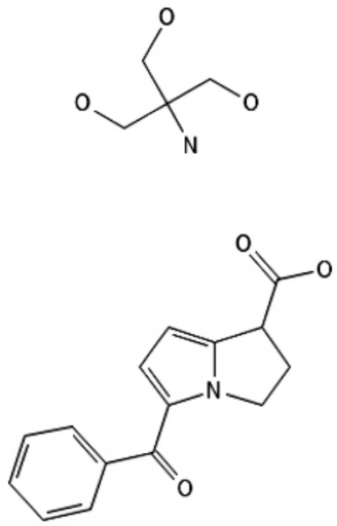

Figure 2. Chemical structure of ketorolac tromethamine.

According to the drug interaction checker tool of drugs. com software, using ketorolac together with diclofenac is not recommended. The risk of gastrointestinal side effects, including bleeding, ulceration, inflammation, and infrequently, perforation, may rise if certain drugs are used together. Gastrointestinal perforation is a potentially fatal ailment and medical emergency in which a hole forms through the stomach or intestinal wall. It is recommended to inform your doctor who may be able to prescribe alternatives that do not interact. Your doctor may also be able to recommend medications to help protect the stomach and intestine if you are at high risk for developing serious gastrointestinal complications.

According to the drug interaction checker tool of Medscape software, there are four various possibilities; The first possibility is serious and using diclofenac and ketorolac as either increases toxicity of the other by pharmacodynamic synergism, The second and third possibilities need to be monitored closely as diclofenac and ketorolac both increase anticoagulation and serum potassium, The last is minor and significance unknown as diclofenac will increase the level or effect of ketorolac by acidic (anionic) drug competition for renal tubular clearance.

We must pay attention to the fact that not all data is involved in one source, so we should not rely on one source and search for many various accredited sources. For example, on checking interactions between the above-mentioned drugs in our case, the results said that there was no drug-drug interaction.

How to overcome such serious health problems?

We strongly encourage the activation of clinical pharmacist roles in all medical, pharmaceutical, and health provider's. The Ministry of Health should put an end to charging medications roughly and randomly. They should take strict measures in order to save people's health. Prescriptions should not be charged without the physician's stamp and during only five days from the diagnosis date. Selected drugs, doses, interactions, and adherence to updated clinical guidelines should be reviewed and verified by a clinical pharmacist. Certified healthcare providers only who should only practice medical care, not anyone with an unauthorized medical background. Pharmacists and physicians must acquire computer and AI skills to access updated scientific information (Table 1) rapidly and readily.

Table 1. International Medical and Pharmaceutical databases.

No.	Database	URL
1	Drugs.com	https://www.drugs.com
2	Medscape	https://reference.medscape.com
3	Lexicomp	https://online.lexi.com
4	UpToDate	https://www.uptodate.com
5	PubChem	https://pubchem.ncbi.nlm.nih.gov
6	DRUGBANK	https://go.drugbank.com
7	PubMed	https://pubmed.ncbi.nlm.nih.gov
8	Scopus	https://www.scopus.com

Such interactions could be tested in vitro and in vivo on animal models, exploring various strategies to discuss the severity of Diclofenac - ketorolac interaction and how to manage it via pharmacokinetic studies.

This paper highlights the potential dangers of co-administration of diclofenac and ketorolac. The use of ketorolac in combination with other nonsteroidal anti-inflammatory drugs (NSAIDs) may increase the risk of serious adverse effects such as renal failure and gastrointestinal toxicity including inflammation, bleeding, ulceration, and perforation of the oesophagus, stomach, or intestines. Concurrent use of ketorolac with other NSAIDs or aspirin is considered contraindicated (5).

Conflicts of Interest

The author claims they have no financial or other conflicts of interest.

References

1. Vane JR, Botting RM. Mechanism of action of nonsteroidal anti-inflammatory drugs. Am J Med. 1998;104(3A):2S-8S; discussion 21S-22S.
2. Moore RA, McQuay HJ, Derry P, et al. Single dose oral diclofenac for acute postoperative pain in adults. Cochrane Database Syst Rev. 2004(2):CD004768.
3. Gan TJ. Diclofenac: an update on its mechanism of action and safety profile. Curr Med Res Opin. 2010;26(7):1715–31.

4. Flores Murrieta FJ, Granados Soto V. Pharmacologic properties of ketorolac tromethamine: A potent analgesic drug. CNS Drug Reviews 1996; 2: 75-90
5. Catapano MS. The analgesic efficacy of ketorolac for acute pain. J Emerg Med. 1996;14(1):67-75.

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