|| ISSN(online): 2589-8698 || ISSN(print): 2589-868X ||
International Journal of Medical and Biomedical Studies
Available Online at www.ijmbs.info
NLM (National Library of Medicine ID: 101738825)
Index Copernicus Value 2019: 79.34
Volume 5, Issue 7; July: 2021; Page No. 39-41

ROLE OF CALCIUM CHANNEL BLOCKER IN EXCESSIVE MAST CELL DEGRANULATION

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Article Info: Received 05 May 2021; Accepted 30 June 2021
DOI: https://doi.org/10.32553/ijmbs.v5i7.1981
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Conflict of interest: No conflict of interest.

Abstract

Background: Here, I present a case of a female patient, age 45 years, for whom the uncontrolled mast cell degranulation created many issues related to allergy like, skin rash, itching, breathing discomfort, frequent throat infection, GERD, migraine, fibromyalgia, peripheral neuropathy, depression, anxiety disorder, constipation etc. For the patient, it was observed that calcium channel blockers seem to control the unnecessary and uncontrolled mast cell degranulation. CCB seemed to have a role to play in mast cell degranulation.

Case presentation: When the patient is taking either Flunarizine or Pregabalin or both together, the need for antihistamine and montelukast are very low. The patient suffers less throat infection while Flunarizine or Pregabalin are being taken. More the dose of Pregabalin less the occurrence of any type of allergy (food, pollen, dust etc.). The requirement of corticosteroid inhaler for breathing discomfort is also less. Frequency of body pain, migraine is minimal. Occurrence of stomach acid or GERD or digestion disorder is also very less. In terms of mood or anxiety, body is stable too. So, per day when 3 Pregabalin (75mg) were taken with 1 Amitriptyline (50mg) and 1 Duloxetine (60mg) health is completely stable with no need for H1 Blocker, H2 Blocker, Montelukast and Corticosteroid inhaler.

Conclusion: CCB, specifically L-type CCB must have role in controlling the degranulation of mast cells, thus reducing all problem together at the root. But there are disadvantages like aggravated IBS (lazy gut), aggravated RLS and fluid retention (swelling of palm).

We must check the use of Gabapentin and Sodium cromoglycate too. They should also control the unnecessary mast cell degranulation. Thus, fixing the problem at the root.

Keywords: CCB, specifically L-type CCB

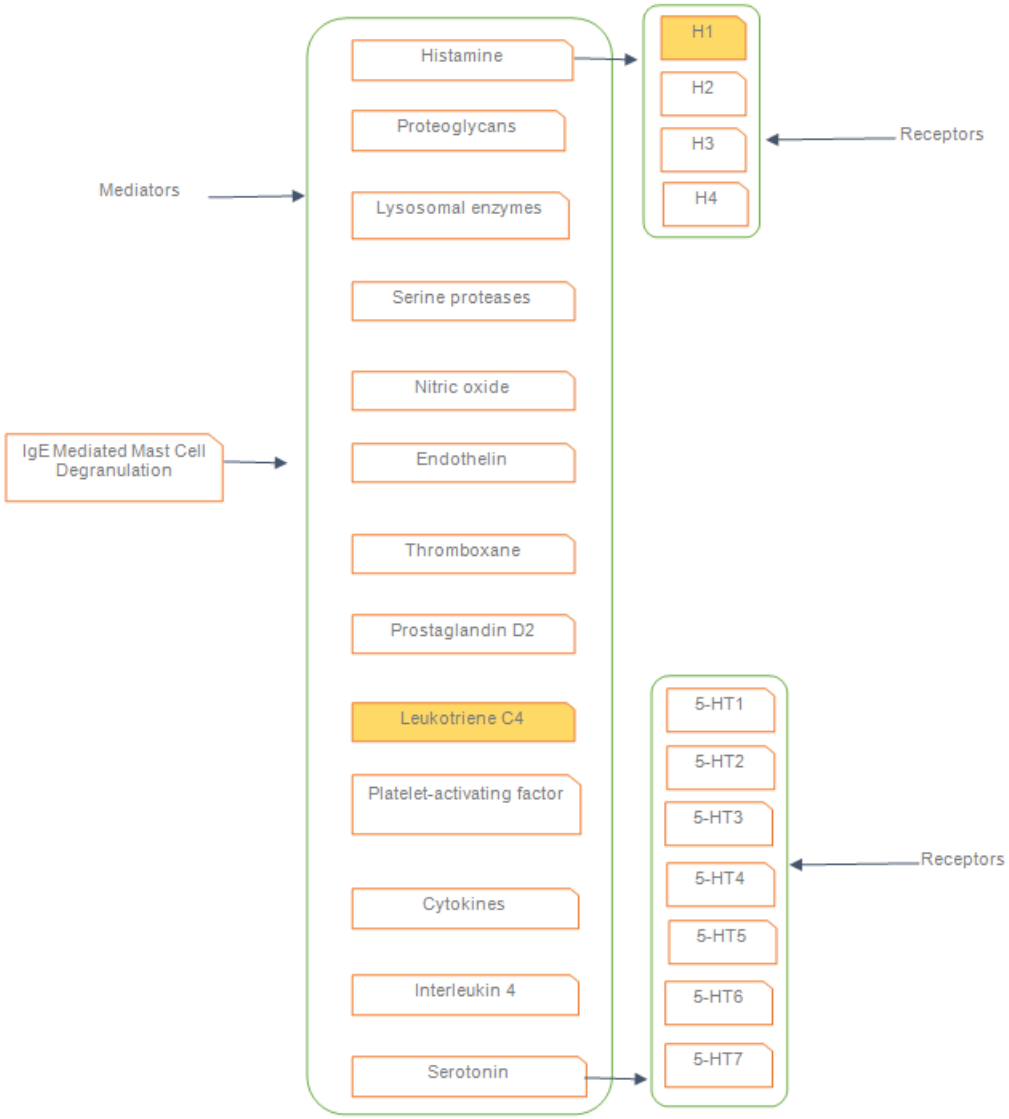
Background:

The patient suffered from food allergy, pollen, dust, hot, cold allergy, and frequent throat infection from childhood. Due to continuous allergy and infection, patient started getting breathing discomfort from 12+ of age. Up to a time only antibiotics and cough syrups used to be the treatment procedure. After a certain time, antihistamine and montelukast tablets used to help for allergy and rashes, corticosteroid inhalers used to help for the breathing discomfort and azithromycin tablets used to help for throat infections. All these are for time being relief and not for treating the root cause. Later this patient grows, stomach acid problem, frequent headache, and body ache. Paracetamol and NSAID tablets helped controlling the pain temporarily. And for acid or GERD problem H2 blocker or PPI were the solution given. While the list of medicine started growing to be a big one, with age, new diseases also started getting added to the list. The headache and body ache became unbearable and more frequent, almost every day. So, migraine and fibromyalgia are added to the disease list. Patient was initially treated with Flunarizine. Migraine and food allergy problems were under control. It is known that Flunarizine is having some antihistamine properties. It has been seen that the patient was doing good when the medicine is applied. As soon as the medicine is stopped migraine and allergy both are back. At a given point, the patient started showing problems of anxiety disorder and neuropathy pain and more severe migraine. As a whole patient needed to deal with allergy, asthma, migraine, fibromyalgia, depression, GERD, RLS, weak muscle all problems together. H1 Blocker (SOS), H2 Blocker (SOS), Montelukast (SOS), Corticosteroid inhaler, Sertraline, Flunarizine, Pregabalin and NSAID (SOS) seemed to work to put the patient in a stable condition. After long term use of Sertraline, Flunarizine, Pregabalin patient started facing the problem of Irritable bowel syndrome (IBS). Colonoscopy report shows, a lazy gut problem. This is probably due to the muscle relaxant medicines.

On using either Flunarizine or Pregabalin or both together, the need for antihistamine and montelukast are very low. The patient suffers less throat infection while Flunarizine or Pregabalin are being taken. More the dose of Pregabalin less the occurrence of any type of allergy (food, pollen, dust etc.). The requirement of corticosteroid inhaler for breathing discomfort is also less. Frequency of body pain, migraine is minimal. Occurrence of stomach acid or GERD

or digestion disorder is also very less. In terms of mood or anxiety, body is stable too. So, per day when 3 Pregabalin (75mg) were taken with 1 Amitriptyline (50mg) and 1 Duloxetine (60mg) health is completely stable with no need for H1 Blocker, H2 Blocker, Montelukast and Corticosteroid inhaler.

The disadvantage is IBS is aggravated. Gut's motility is too low with all the muscle relaxants. There is difficulty peeing (Amitriptyline induced). More weight was gained (Pregabalin induced). There is problem of fluid retention. Palms were swelled. RLS frequency is increased with Pregabalin (3 times).



Discussion:

On using Flunarizine, it was previously seen that the need for H1 Blocker and H2 Blocker are much less. Later when patient is on Pregabalin the need for H1 Blocker and H2 Blocker are almost null. With Flunarizine no apparent disadvantages were seen but muscle pain was not controlled in a great deal. With Pregabalin allergy and related problems are almost gone but constipation, weight gain, fluid retention and RLS problems are reported. From a 15 to 20 years long observation, it seems that L-type calcium channel blocker has role to play in mast cell degranulation or in releasing histamine and other neurotransmitters which are responsible for all the discomforts in the patient. The advantage is restricting the release of histamine reducing allergy and breathing discomfort and restricting the release of glutamine in CNS thus reducing headaches. Amitriptyline too has some channel blocker features.

We must find out a way to consume selective calcium blockers controlling swelling and constipation.

Pregabalin along with Amitriptyline works excellent for all the above allergy related discomforts. Gabapentin and

Sodium cromoglicate should also work fine. But this is not tested.

In Fig-1, it has been shown that, when unnecessary mast cell degranulation happens, then there are lot of mediators which can harm us (anything excessive is harmful for our body). As per the diagram, we can block only few of them. But if we stop the excessive degranulation, then the problem is fixed at root.

The unnecessary mast cell degranulation disturbs the intestine and the released mediators start the problem of food allergy, food intolerance, IBS, and other problems. There may be one mediator which is responsible for disturbing the gut, or gut muscles become weaker, so the gut motility is affected. For food intolerance we see the problem starts after 4 to 12 hours later after eating. The Gut-brain axis is disturbed, results in gut disorder, and headache. One of the reasons of IBS can be excessive mast cell degranulation. But the mediator responsible is not yet identified.

So, it may not be too much of mast cell build up problem like mastocytosis, but moderate number of mast cell build up is the cause of too much sensitivity. Sodium cromoglycate medicine should be allowed for the treatment.

Somehow, the below medicine combination is helping in preventing too much of mast cell build up in few areas, or they are preventing the mast cell degranulation.

Pregabalin (75mg) per day thrice

Amitriptyline (50mg) per day one

Duloxetine (60mg) per day one

We should also check the result when Pregabalin is replaced with Gabapentin or Sodium cromoglycate. Sodium cromoglycate is not available for treatment of IBS or other gut problems like food intolerance etc.

Abbreviations:

RLS: Restless Leg Syndrome

CNS: Central Nervous System

GERD: Gastroesophageal reflux disease

IBS: Irritable bowel syndrome

NSAID: Nonsteroidal anti-inflammatory drugs

CCB: Calcium Channel Blocker

Declarations:

Ethics approval and consent to participate: Not applicable

Consent for publication: Written informed consent was obtained from the patient for publication of this case report and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal

Availability of data and materials: Not applicable

Competing interest: None

Funding: No relevant funding to declare

Authors' contributions: DP: Contributed to writing the case and discussion, SR: Contributed to writing the case and discussion, JF: Contributed to writing the case and discussion, all authors have read and approved the final manuscript

Acknowledgements: Not applicable

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