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COMPARISON BETWEEN THE PAIN RELIEVING ACTION OF SERRATIOPEPTIDASE, NSAIDs AND COMBINATION OF BOTH IN THE ROOT CANAL TREATMENT PATIENTS

Prafulla Mane, Kavita Atre, Rahul Mayee

¹SRM Clinical Research Services Pvt. Ltd. Aurangabad (MS)

Email of Corresponding Author: atrekavita@gmail.com

ABSTRACT

A three arm observational study was conducted by SRM Clinical Research Services Pvt. Ltd. to compare the efficacy of NSAIDs, serratiopeptidase enzyme and the combination of the two in relieving of pain of the root canal patient in the Aurangabad (MS) region. The study was conducted on 45 patients who were provided with a pain scale to keep a record of their rate of pain at the dosing time as well as at an hour from dosing. The rate of pain for each day was recorded in the patient's diary provided to the patients. The data was recorded from the time the root canal was opened till it was operated which is usually about 4-5 days. The data was then analyzed using statistical method and was finally represented as a histogram for easy comparison. The comparison was done for all the three arms i.e., patients prescribed with only NSAIDs, only serratiopeptidase & a combination of both the drugs. The histogram clearly indicated the change in level of pain in the patients. It was observed that the pain decreased in level when the patients consumed only NSAIDs or only serratiopeptidase enzyme but the pain was found to have aggravated in some patients of Aurangabad region when combination of both NSAIDs and serratiopeptidase was prescribed to them, hinting at an antagonistic action of the two.

Keywords: Serratiopeptidase, Pharmacovigilance, Root Canal Treatment.

INTRODUCTION

Pharmacovigilance

The word 'pharmacovigilance' has been derived from a Greek word "pharmakon" which means medicinal substance & a Latin word "vigilare" which means to keep watch. In 2002,

World Health Organization (WHO) defined Pharmacovigilance as "The science and activities relating to the detection, assessment, understanding and prevention of adverse effects or any other drug-related problems."^[1]

The percentage of hospital admissions due to iatrogenic diseases (those caused by drugs) is as high as 3 to 5 % in USA alone.^[2] Therefore, it is one of the most important pre-requisites for the progress

of medicine that the new drug being introduced in the market should not cause many adverse drug reactions (ADRs).

Studies directed at detecting and assessing safer use of medications, appear mandatory to prevent ADRs and achieve rational therapeutic practices. Such activity requires collective and co-ordinated efforts from all the healthcare professionals such as – doctors, nurses and pharmacists. In addition, distribution of ADR data among consumer groups and pharmaceutical firms also becomes necessary.^[3]

There is certainly a need to be ‘vigilant’ about Pharmacovigilance studies.

Serratiopeptidase

Pain is one of the most troubling aspects of inflammation. Acute pain produced by cellular chemical reactions is part of the body’s natural inflammatory healing response. Chronic pain, though, can be detrimental to healing. Swelling caused by inflammation can cause tissue to press against sensitive nerves and cause pain. The conventional treatment for inflammation disorders has a dark side – serious side effects. The two most common treatments for inflammation are steroids such as Prednisone and non-steroidal anti-inflammatory drugs, called NSAIDs both of which are associated with serious side effects such as thinning of skin, slow wound healing, high blood pressure, lowered immune system, fluid retention, suppression of normal adrenal function ulcers, internal bleeding etc.^[4]

Fortunately, there is a natural alternative to steroids and NSAIDs that is effective without serious side effects - Serratiopeptidase or serrapeptase which is a protein (proteolytic) enzyme isolated from the non-pathogenic enterobacteria *Serratia E15* found in silkworms. Serratiopeptidase’s ability to reduce and drain fluid from the inflamed area can reduce swelling and pain. It also reduces pain through its ability to block the release of pain-inducing amines from inflamed tissues.^[5] Unlike NSAID pain medications, serratiopeptidase does not cause dangerous internal bleeding, nor is it addictive like many pain medications. Hence, it is being widely used in treating various diseases such as, inflammation, sinusitis, bronchitis, infection, atherosclerosis, carpal tunnel syndrome & in reducing pain.^[6-13]

Brainwave

Pharmacovigilance (PV) has now been established as an important part of research activities owing to the statistical observations of ADRs recorded in various countries. But, like every research activity, PV also needs generation of some idea or as it may be rightly called a ‘brainwave’ for the commencement of the study. Such a brainwave was generated by few dentists in Aurangabad (MS) region which are a part of the SRM Clinical Research Services Pvt. Ltd. database. It was regarding the above mentioned miracle enzyme - *Serratiopeptidase*. Given its anti-inflammatory capability, Serratiopeptidase is widely used by dentist during the root canal treatment

(RCT). It is prescribed during the pre-RCT period from the time RC is opened till the time it is operated. It is either prescribed individually or in combination with NSAIDs. These conventional NSAIDs are used widely during the root canal treatment for dental patients. The NSAIDs are used as covering agents for pain before and after the root canal procedure. Now-a-days, Serratiopeptidase and the combination of NSAIDs and Serratiopeptidase are also used for the same purpose.

It was observed by few dentists that though Serratiopeptidase is an established anti-inflammatory agent, it was found to be aggravating the pain in the RCT patients when administered in combination with other NSAIDs. It was this observation that led us to propose the study to compare the efficacy of NSAIDs, Serratiopeptidase and combination of both in the pain relieving capacity.

MATERIALS AND METHODS

Protocol was generated for comparing the efficacy of NSAIDs, Serratiopeptidase and a combination of both in the pain relieving capacity in the root canal patients of the Aurangabad (MS) region. The protocol was submitted to the Institutional Review Board (IRB) of SRM Clinical Research Services Pvt. Ltd. Feasibility assessment was conducted for 20 dental sites after the protocol was approved by the IRB of SRM Clinical Research Services Pvt. Ltd. Only 14 sites were selected for the study as they provided us with patients undergoing RCT. Each

of the sites was assigned a specific site number. Recruitment of the patients was done after their informed consent. Totally 45 patients were enrolled for the study, out of which 12 patients were prescribed NSAIDs, 10 patients were prescribed serratiopeptidase and 13 patients were prescribed combination. This being a pharmacovigilance observational study, the prescription of the drug was left to the sole decision of the dentist. A three arm study was conducted which comprised of patients being treated with only NSAIDs, only Serratiopeptidase and the combination of both. The case report form was duly filled which included patient's medical history and the drugs prescribed for RCT. The patients were provided with a patient diary which contained a pain rating scale ranging from 0 – 10 (Figure 1). Data was recorded at both dosing time as well as after one hour from dosing, from the time root canal was opened till it was operated which is usually about 4-5 days. Average of the rate of pain of both the timings was calculated for each patient. A gross average was calculated for both the timings for each of the patient of all the three arms. The final average value was calculated by taking the average of the gross values. These final average values were then used to plot the histogram to compare the efficacy of the three arms in the treatment of the RCT patients.

RESULT AND DISCUSSION

The average rate of pain for NSAIDs was found to have decreased from 5.72 at dosing time to 2.98 after one hour from dosing. A similar decrease in pain

was also seen in patients administered with serratiopeptidase enzyme where the rate of pain at dosing time was 3.15 but after one hour from dosing it was reduced to 1.02. But, a similar pattern was not observed in case of combination drugs. Contrary to decrease in pain in case of NSAIDs and serratiopeptidase, the pain was found to have aggravated in the patients of Aurangabad (MS) region which were administered with a combination of the two drugs. The rate of pain increased from 5.63 at the dosing time to 8.22 after one hour from dosing.

CONCLUSION

This three arm study was conducted to compare the efficacy of NSAIDs, serratiopeptidase enzyme and combination of the two in the pain relieving capacity for root canal treatment. It was observed from the study that NSAIDs and serratiopeptidase were capable of reducing the pain whereas a combination of the two drugs exhibited aggravation of pain in the root canal patients. Hence, it can be concluded that there might be an antagonistic relationship between the two drugs. This was a pilot study conducted by SRM Clinical Research Services Pvt. Ltd. in the Aurangabad (MS) region. Thus, it clearly suggests that a similar pharmacovigilance study on a large population should be conducted for the benefits of the consumer groups and Pharmaceutical firms.

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Table 1: Average Rate of Pain of NSAIDs Patients

Patient No.	1	2	3	4	5	6	7	8	9	10	11	12
At Dosing Time	5.08	5.56	6.2	5.82	5.96	5.68	5.08	5.56	6.20	5.96	5.82	5.68
1 Hour from Dosing	2.76	2.56	3.50	2.96	3.16	3.02	2.56	2.56	3.50	3.16	2.96	3.02

Table 2: Average Rate of Pain of Serratiopeptidase Patients

Patient No.	1	2	3	4	5	6	7	8	9	10
At Dosing Time	2.10	1.46	3.90	2.46	3.56	3.90	3.10	3.20	4.60	3.20
1 Hour from Dosing	0.70	0.20	1.70	0.50	0.78	1.90	0.80	1.10	2.10	0.40

Table 3: Average Rate of Pain of Combination Patients

Patient No.	1	2	3	4	5	6	7	8	9	10	11	12	13
At Dosing Time	6.58	5.64	6.02	6.04	3.78	5.84	5.84	5.94	5.40	6.00	5.20	5.10	5.80
1 Hour from Dosing	7.70	8.70	8.52	8.32	6.62	8.50	8.16	9.04	8.50	8.40	7.80	8.10	8.50

Table 4: Net Average Rate of Pain of the Three Drugs

Drug type	Net Average of Rate of Pain	
	At Dosing Time	1 Hour from Dosing
NSAIDs	5.72	2.98
Serratiopeptidase	3.15	1.02
Combination	5.63	8.22

Figure 1: Patient Rating Scale

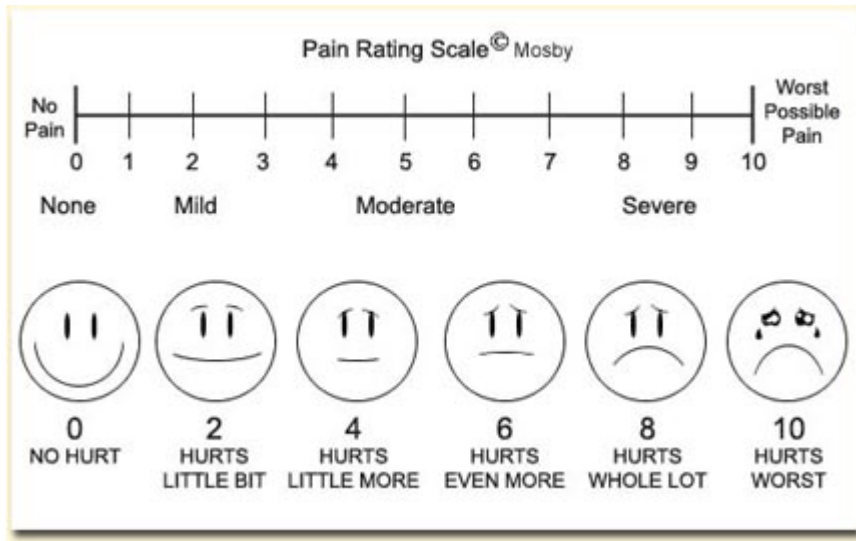


Figure 2: Histogram

