

**EVALUATION OF STATUS OF SERUM ELECTROLYTES W.R.T.  
VIRECHANA KARMA IN PSORIASIS****Sharayu Kachole<sup>1\*</sup> and Niranjana Rao<sup>2</sup>**<sup>1</sup>MD Scholar, Department of PG Studies in Panchakarma, SDMCA Udupi.<sup>2</sup>Dean PG & PhD studies, Professor and HOD, Department of PG Studies in Panchakarma, SDMCA Udupi.Article Received on  
07 May 2021,Revised on 27 May 2021,  
Accepted on 17 June 2021

DOI: 10.20959/wjpr20218-20840

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PG Studies in Panchakarma,  
SDMCA Udupi.**ABSTRACT**

The present world demands evidence based practice. Psoriasis is a common, chronic inflammatory, non-communicable, hyper proliferative skin disease with no clear cause or cure which has a wide prevalence and is treated on the lines of Kushta according to Ayurveda. Virechana is one of the Panchakarma that is practiced widely all over for the management of Kushta and involves large bouts of bowel evacuations. Fluid loss from the GI tract on such a scale is supposed to be a cause for fluid and electrolyte imbalance. Hence, this study was up taken to evaluate the levels of serum electrolytes before and after

Virechana karma and help to prove its safety.

**KEYWORDS:** Virechana, Serum electrolytes, Psoriasis, Ap dhatu, Fluid balance.**INTRODUCTION**

The human body is a brilliant wonder made of about 60-70 % water. This water in the form of Intracellular Fluid (ICF) and Extracellular Fluid (ECF) along with the naturally occurring mineral ions suspended in it called electrolytes, is essential for maintenance of the internal homeostasis. Serum electrolytes like Na<sup>+</sup>, Cl<sup>-</sup>, K<sup>+</sup> serve some crucial functions like regulating the water balance, body's pH levels, muscle contractions etc. The human body tries to maintain the fluid and electrolyte balance through various complex mechanisms. The gastro intestinal tract has an important role to play in this. All segments of the GIT from the duodenum till the distal colon have mechanisms for both absorbing and secreting water and electrolytes required to maintain this homeostasis. Out of the average 2000 ml of ingested fluid and 7000 ml of secretions from the GIT daily, 98% is reabsorbed and only about 100-

200 ml is passed in the form of formed stools. In case of diarrhea or induced purgation, more water is retained in the intestinal lumen and excreted out in the form of loose stools. This leads to fluid loss and in severe cases, signs and symptoms of dehydration and electrolyte imbalance are very commonly seen. However, if purgation is induced through Virechana and if samyak shuddhi with vegas between 10-30 times is achieved, such signs and symptoms are not usually seen. Hence, there was a need to evaluate and understand the status of serum electrolytes before and after Virechana.

In order to conduct any study, a uniform group is required. For this purpose the patients suffering from the same disease needed to be selected. Psoriasis is an immune mediated disease characterised by erythematous plaques with mica-like scales, sharply demarcated and seen more commonly in males compared to females. It is a very common disease which affects about 2% of population worldwide. It can be considered under the broad concept of Kushta in Ayurveda, which is a tridoshatmak vyadhi involving the Sapta dravyas where the bahudoshavastha requires repeated Shodhana. Its symptoms are similar to those found in Mandala, Eka, Kitibha types of Kushtha. Virechana or purgation therapy is one amongst the samshodhana karma in Ayurveda, which is the best shodhana treatment for Pitta and also removes the other morbid doshas through adho marga of shareera. It is routinely and widely practiced in the treatment of Kushta. Hence patients diagnosed as Psoriasis were incorporated into the study to observe changes pertaining to serum electrolytes in relation to Virechana karma.

## AIMS AND OBJECTIVES

To evaluate the status of serum electrolytes before and after Virechana therapy in Psoriasis.

## MATERIAL AND METHODS

### Study design

- This was an open label clinical study with pre-test and post-test design where 30 patients diagnosed of Psoriasis, of either gender were selected based on diagnostic and inclusion criteria.

**Sample size:** Minimum 30 patients diagnosed of Psoriasis were selected.

- A detailed proforma was prepared considering the points pertaining to signs, symptoms and examinations as mentioned in Ayurvedic classics and allied sciences to confirm the diagnosis.

**Intervention**

In the selected patients, Virechana was given as follows:

**Virechana****Poorvakarma**

- Deepana, pachana with Panchakola Phanta 30 ml TID before food till the appearance of Niramavastha for (3 to 7 days)
- Snehapana with Tiktaka Ghrita (with ushna jala as anupana) till Samyaka Snigdha lakshana arise (3 to 7 days)
- Swedana by Dashmula Kwatha Bashpasweda for 4 days.

**Pradhana karma**

- Trivrutavaleha was administered in the dose depending upon the Roga and Rogi Bala, Agni and Koshta.

**Paschat karma**

- Samsarjana krama depending on Shuddhi lakshana- 3 to 7 days.

**Investigations**

Routine haematological investigation were done to rule out presence of any other systemic illness.

- Serum Electrolyte levels- Samples will be taken twice.

1<sup>st</sup> sample- before the Virechana drug is administered to the patient

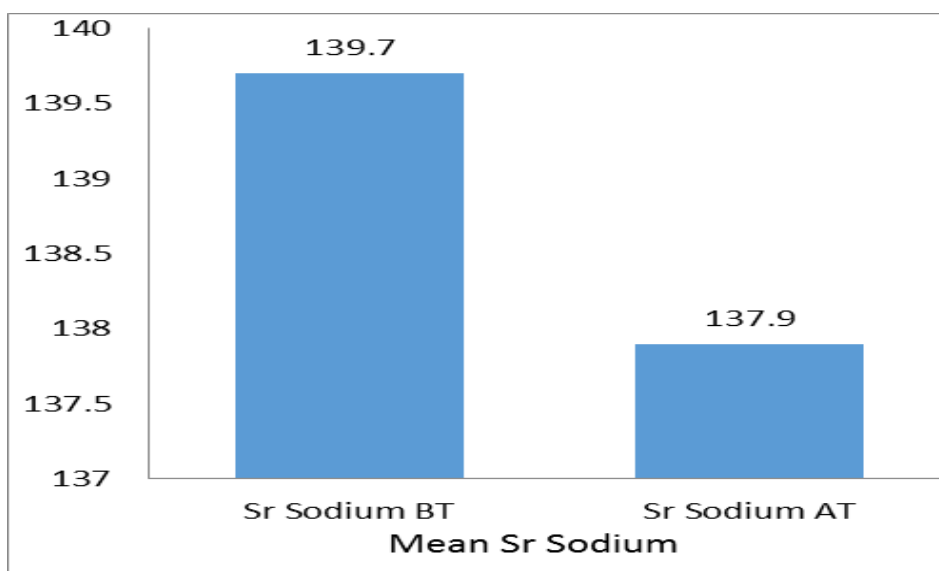
2<sup>nd</sup> sample- night at 8 pm on the same day of the Virechana karma

**RESULTS**

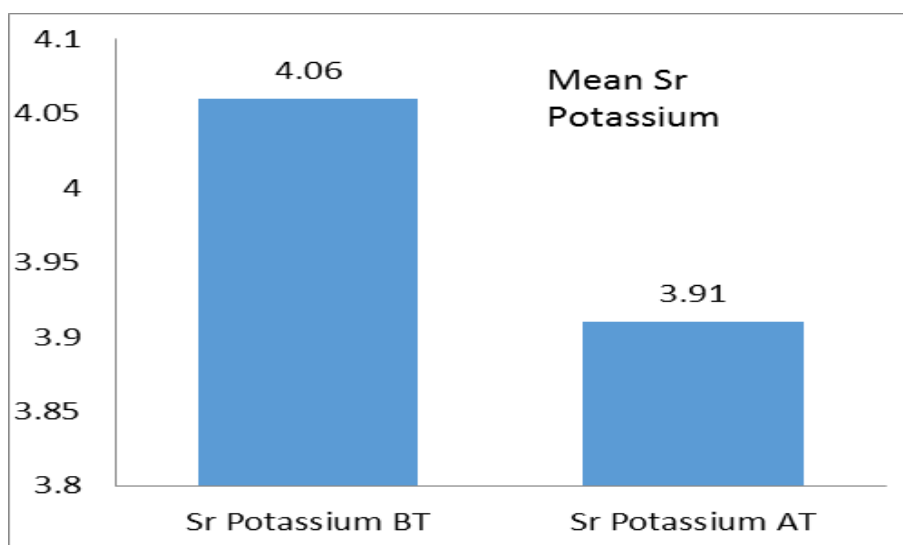
1. The serum electrolyte levels assessed before and after Virechana karma revealed that, serum Sodium concentration decreased by 1.25%, serum Potassium concentration decreased by 3.69 % and serum Chloride concentration decreased by 2.32%.
2. None of the subjects showed any signs and symptoms of fluid and electrolyte imbalance.
3. The PASI score before and after Virechana karma showed an improvement of 5.57%.
4. All the 30 subjects showed improvement in their signs and symptoms related to Psoriasis in terms of Erythema, Scaling and Thickness after Virechana.
5. Based on Laingiki, Vegiki and Antiki parameters, 23 out of 30 patients achieved Samyak shuddhi while the remaining 7 had Avara shuddhi.

Table no. 1: Shows the statistical analysis of the data.

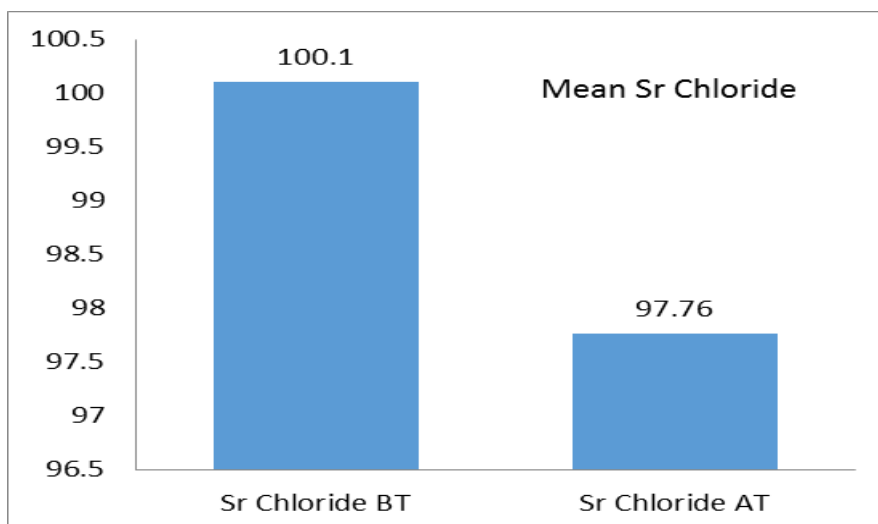
Parameters	Mean	N	Std. Deviation	Std. Error Mean	Mean difference	%	T	P value	Interpretation
Sr Sodium BT	139.7	30	1.65	0.30	-1.76	1.25	-5.22	0.000	HS
Sr Sodium AT	137.9	30	2.09	0.38					
Sr Potassium BT	4.06	30	0.40	0.07	-0.15	3.69	-2.07	0.047	S
Sr Potassium AT	3.91	30	0.41	0.07					
Sr Chloride BT	100.10	30	1.70	0.31	-2.33	2.32	4.67	0.000	HS
Sr Chloride AT	97.76	30	2.55	0.46					
PASI BT	23.12	30	13.54	2.47	-1.29	5.57	6.49	0.000	HS
PASI AT	21.82	30	13.08	2.38					



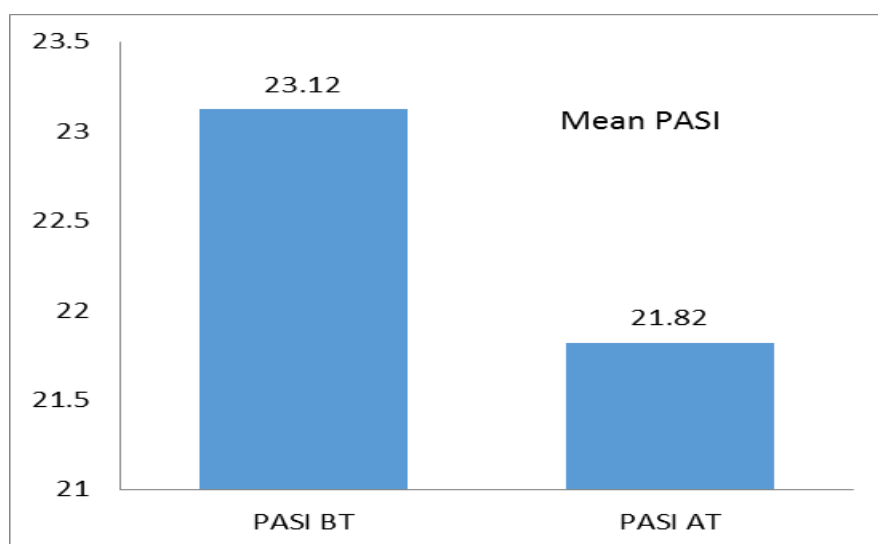
Graph no. 2: Changes in serum sodium levels BT &amp; AT.



Graph no. 2: Changes in serum potassium levels BT &amp; AT.



**Graph no. 3: Changes in serum chloride levels BT & AT.**



**Graph no. 4: Changes in pasi score BT & AT.**

## DISCUSSION

The fluids in the human body along with solutes like electrolytes, act as an important media for maintaining the internal homeostasis. The amount of fluid gained throughout the day must equal the amount loss.

Normally, as seen earlier, very little fluid is lost from the GI system as most of it is reabsorbed. However, a potential for significant loss exists because a large amount of fluids-isotonic and hypotonic- pass through the GIT over the course of a day. Isotonic fluids that may be lost from the GIT include gastric juices, bile, pancreatic juices and intestinal secretions. With excessive GI fluid loss, the patient may show signs of hypovolemia. Tachycardia occurs as the body tries to compensate for hypovolemia by increasing the heart

rate. Blood pressure also falls as intravascular volume is lost. The patient's skin may be cool and dry as the body shunts blood flow to major organs. Skin turgor may be decreased or the eyeballs may appear to be sunken, as occurs with dehydration. Urine output decreases as kidneys try to conserve fluid and electrolytes. Due to electrolyte imbalance, cardiac arrhythmias may occur; patient may feel weak and confused and experience muscle cramps. Mental state may deteriorate as fluid, electrolyte and acid- base imbalance progress.

In Virechana, which is induced purgation practiced widely & routinely; we see a similar amount of fluid loss. Acharyas have described in detail about the signs and symptoms to be observed after samyak, ayoga and atiyoga of Virechana. A person has up to 30 bowel evacuations as pravara shuddhi in samyak yoga.

Most of the skin disorders are mentioned in Ayurvedic classics under the broad classification of Kushta. It is a tridoshatmaka vyadhi involving Twak, Rakta, Mamsa and Lasika as dushyas. Being a bahudoshavastha, Shodhana at repeated intervals have been advised as the main line of management. Virechana is the ideal method of Shodhana when action on all the doshas is expected. Being the shrestha upakrama for Pitta dosha, its action is also seen on Rakta dhatu. Hence this study was undertaken to establish the efficacy and safety of Virechana karma in Psoriasis. 30 patients diagnosed as Psoriasis were included in the study and subjected to methodical Virechana.

### **Features of dehydration**

Amongst these 30, 28 (93.3%) patients expressed thirst and 22 (73.3%) had complaint about weakness. Mild loss of skin turgor was observed in 12 (40%) subjects. These present features indicate mild dehydration. Other signs of moderate to severe dehydration like dry mucous membranes, weak rapid pulse, altered sensorium, hypotension, oliguria, sunken eyes, etc were not seen in any of the patients.

On the day of Virechana, the patient is asked to be on empty stomach the whole day and to consume water little by little whenever he/ she feel thirsty or after passing every vega. The above observation explains that the amount of fluid that is evacuated is replaced with the consumed amount of water, thereby maintaining the fluid balance. The above observation points towards the mild signs of dehydration seen in some of the patients where the amount of fluid loss exceeded the fluid gain. Hence the rationality behind importance of this practice of consuming Jala as anupana as mentioned in the classics, can be understood.

**Changes observed in serum sodium levels Before and After virechana**

Water and ions from semi digested food is absorbed throughout the intestines. Re-absorption of electrolytes is mainly seen in the large intestine. Virechana drug increases the motility of intestines, thereby allowing reduced time interval for the re-absorption of these electrolytes and water thus leading to hypovolemic hyponatremia where both sodium and water levels decrease in the extracellular area, but sodium loss is greater than water loss. This pathophysiology can be understood for atiyoga of Virechana. In Virechana, the steady fluid intake helps to maintain the fluid balance and helps the body to recuperate from water and sodium loss to some extent as seen in isovolemic hyponatremia. Hence the sodium loss seen after Virechana is maintained within the normal physiological range.

Symptoms of hypokalemia like muscular weakness, fatigue, paralytic ileus, polyuria, tetany, cardiac arrhythmia etc. were not observed in any of the 30 subjects.

**Changes observed in serum potassium levels Before and After virechana**

The human body can't conserve Potassium. Inadequate intake and excessive output of potassium can cause a moderate drop in its level, upsetting the balance and causing a potassium deficiency. Intestinal fluids contain large amounts of potassium. Severe GI fluid losses can deplete body's potassium supply. As a result, potassium levels drop. Alkalosis and hypokalemia is seen in such conditions. Alkalosis moves potassium ions into the cells as hydrogen ions move out to counteract this. Because the cells contain more of potassium than usual, less can be measured from the blood.

As the fluid levels are well maintained in Virechana with consumption of water at regular intervals, the shift in potassium ions and their loss is seen to a smaller extent. Thus the changes seen in serum potassium levels are well within the normal physiological range.

**Changes observed in serum chloride levels Before and After virechana**

The reason for decrease in the serum chloride concentration may be attributed to the following reasons: serum chloride levels drop when chloride intake or absorption decreases or when chloride losses increase as seen in fluid loss through GI tract. Changes in sodium levels or acid- base balance also alter chloride levels. Causes of hypochloremia also include sodium and potassium deficiency which was observed to some extent in the present study.

### Ap Dhatu and Fluid & Electrolyte imbalance

In ayurveda, the body components which are predominant in Ap mahabhuta can be considered under the body fluid entity. Udaka is a term mentioned in the classics which depicts the fluid entity. It is found in 10 Anjali pramana distributed in various forms like Rasa, Rakta, Vasa, Kapha, Pitta, Mutra, Sweda etc. that serve different purposes and are present in specific quantities which can be taken as their prakruta pramanas. Together they can be coined a term as Drava or Ap dhatu. Any vitiation in these drava dhatus or depletion of any of them leads to lakshanas like twak rukshata, glani, pipasa, sira shaithilya, mutra vaivarnya, mutra kricchra, etc. Similar signs and symptoms are seen in dehydration and electrolyte imbalance usually seen in conditions like diarrhea, vomiting, exploitive use of laxatives etc.

When Virechana is performed in bahudoshavastha, the excess of these doshas and dushyas i.e. quantity more than the normal pramanas is eliminated from the body. In the samyak yoga of Virechana, lakshanas like karshyata, dourbalya and laghavata have been mentioned as Hrita dosha lakshana i.e. features seen due to the elimination of this excess. These features are similar to that of mild Ap dhatu kshaya.

When the patient ends up in Atiyoga of Virechana, symptoms are depicting the kapha, rakta and pitta kshaya meaning that these dravyas has been eliminated to a greater extent and there is a reduction in their prakruta pramanas. These features mimic the signs and symptoms seen in severe dehydration and electrolyte imbalance.

**Table no. 2: Correlation between atiyoga of Virechana Lakshanas and Features of fluid and electrolyte imbalance.**

Atiyoga lakshana	Feature of fluid and electrolyte imbalance
Supti	Numbness
Angamarda	Body ache/ muscular cramps
Klama	Fatigue
Vepathu	Tremors
Nidra	Hypersomnia/ loss of consciousness
Tama pravesha	Blackouts/ Visual disturbances
Unmada	Altered sensorium/ Confusion
Hikka	Hiccoughs
Murchha	Fainting spells
Trishna	Excessive thirst
Bhrama	Dizziness/ Vertigo
Netra pravesanam	Sunken eyes



Since Virechana is induced and therapeutic purgation, the preparation involved in form of purvakarma of snehana and swedana must be playing a role in altering the physiology at the cellular level. The cell membrane which is made up of lipids and proteins is semi permeable and also has sodium- potassium pumps responsible for active transport of these ions in and out of cells. Hence, the role of Snehana which is ingestion of fat on the cell membrane needs to be studied in depth in order to further understand its role in altering the normal physiology of fluid and electrolyte homeostasis.

The highly significant statistical result seen in PASI Score before and after Virechana denotes the overall improvement in Erythema, Scaling and Thickness achieved with shodhana in the form of Virechana in Psoriasis.

## CONCLUSION

The changes observed in the serum electrolyte levels before and after Virechana statistically showed highly significant decrease in case of Serum Sodium and Chloride levels, whereas it was found to be statistically significant in case of Serum Potassium. Even then the levels were within the normal physiological range.

The lakshanas of Ap dhatu kshaya like dourbalya, laghavta, karshyata etc are similar to that of the hrita dosha lakshanas at the end of Virechana. These features can be co-related to the signs and symptoms of fluid and electrolyte loss.

Virechana proves to be effective in the management of Psoriasis.

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