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Raktmokshana in *Sharad Ritucharya*: Answer to Various Diseases Disturbing Hematology

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Abstract

Changes in the external environment bring various changes in the human body that cause various diseases, protection from whom requires a continuous conscious effort. These changes with their adaptation have been mentioned in Ayurvedic Samhita's. This study aims to understand and check the curative and preventive relevance of one such regimen of Sharad ritu (~Autumn season), namely, Raktamokshanam (~bloodletting) as mentioned in classical texts of Ayurveda in context to modern day problems. To fulfil this aim texts from Shushrut Samhita were considered to understand the basic principles of Raktamokshanam it's subtypes and its application procedure. Also various research works were taken into consideration after excluding others (because of them being animal, invitro studies, etc.) to understand the impact of different seasons on diseases (here allergic rhinitis, hypertension, eczema, psoriasis, chicken pox and GERD are considered) and also impact of these diseases were seen on various haematological parameters of body which helped in developing the understanding of how Raktamokshanam can be used to treat them. The conclusion made is that Raktamokshanam can be done in Sharad ritu (~Autumn season) to protect the body from seasonal variations. Within Raktamokshanam, Jalaukavcharana is considered the best because of its painless application, it's use in extremely delicate patients, its anti-inflammatory effect, anti-coagulatory effect, vasodilator effect, etc.

Keywords: *Panchkarma*, *Ayurveda*, *Sharad ritu*, *Raktamokshanam*, Jalauka, Jalaukavcharana, Anti-inflammatory

INTRODUCTION

Ayurveda, an age-old science of life mentioned principles of preventive medicine, that are widely used today, back then with great simplicity and ease. One of the most important principles mentioned in classical texts of *Ayurveda* is *Ritucharya (~Seasonal regimens)* which literally means seasonal regimen. *Acharyas* knew about the change in environmental factors caused by revolution of the Earth around the Sun and the tilt of axis of Earth with respect to axis of revolution. As each organism forms a part of the ecosystem and lives in this environment only, thus changes in environment are felt by everyone and each species responds accordingly, for example flowering of plants in spring, hibernation of different animals in winter, etc. Similarly changes in outer environment also impacts human body and even we need to adapt accordingly to minimize the damage that can be caused by the changing environment. Understanding this need, *Acharyas* have mentioned the type of food, clothing, activities to be done in that season. If one follows these seasonal regimens,

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they live a healthy and happy life but most people now-a-days are either unaware or ignore these regimens and thus are making way for many lifestyles related issues, such as obesity, diabetes, cancer, and so on. Lifestyle diseases develop slowly and are hard to identify in initial stages and hard to cure later. In India the situation is getting even worse as lifestyle related issues are not only increasing rapidly but also they are affecting the younger population of the country. India, often referred to as the diabetes capital of the world, is now on track to becoming the leading country for lifestyle-related diseases as well. This article aims to build awareness in society about the seasonal regimens thus helping people lower the changes of lifestyle related issues. In this article, we are mainly going to focus on *Sharad ritu* so let's first see the basic changes in environment in *Sharad ritu* and how our body responds to them. The period from mid-September to mid-November is known as *Sharad ritu*. In this period, the Sun is bright with clear sky. The *pitta dosha* accumulated in *varsha ritu (~Monsoon season)* is aggravated by the Sun rays and pacification of *vaat dosha* (~doṣa responsible for movement and cognition) occurs. *Apya (*~an entity which is responsible for fluidity*)* and *agni (~metabolic process) mahabhutas (~Basic elements)* and *lavana rasa (*~salty taste*)* dominates the Earth during this period. In this time, *Agni bala (~Digestive strength)* of person is said to be *Madhya*. Thus, *Acharyas* advised to consume food with *Madhura (*~sweet taste*)* and *tikta rasa (*~bitter taste*); laghu (*~lightness*)* and *cold guna (*~attribute/ property*)*. Foods that help balance aggravated pitta dosha, one of the three bodily doshas responsible for digestion and metabolism, should be included in the diet. Items like green gram, wheat, sugar candy, *Patola (Trichosanthes dioica),* honey, and Jangala Mamsa are recommended for consumption. *Varjniya ahaar* includes bitter, hot, astringent and sweet food items. Food items, such as oils, fat, curds, meat of aquatic animals, etc. should also not be consumed. Apart from dietary habits *Acharyas* also mentioned the activities one should involve into, such as drinking *hansodak (~water detoxified by exposure to rays of the Sun and the Moon and Agastya star)*, eating only when hungry, applying *Chandana (~sandalwood)* paste all over the body. Some medical procedures that are advised to be done, includes *virechana (~therapeutic purgation)* and *Raktamokshanam*. It is important to avoid sleeping during the day, overeating, and excessive exposure to sunlight [1]. A study done by Walker et al. demonstrated change in levels of glucocorticoids, cortisol present in plasma and saliva with changes in season. These chemicals help in carbohydrate metabolism. The findings of the study were that during autumn and winters highest levels of these chemicals were found [2]. Here *Acharya* mentioned a medical procedure, namely, *Raktamokshanam* which is considered as treatment of half of the diseases in surgical and parasurgical cases. It is considered as best therapy in blood borne and *pittaja* diseases. This is because pitta and *rakt (~Blood tissue)* have *ashraya-ashrayi bhaav* relationship where *pitta* is the *ashrayi* and *rakt* is the *ashraya*, i.e., disturbance in anyone would affect the other for sure. In *Sharad ritu*, bloodletting is advised because *pitta* is vitiated (aggrevated) during this time and thus bloodletting allows the vitiated *rakt* to come out of the body, thus maintaining equilibrium. It is done in both normal and diseased conditions. In classical texts of Ayurveda, various methods of bloodletting are mentioned in detail with their procedure, contraindications, etc. *Raktamokshanam* is divided into 2 types – *Shastra dvara (~with the help of surgical instruments)* and *shastra rahit (anushastra) (~bloodletting with the help of instruments as an alternative to surgical instruments)* based on types of instruments used. *Sastravisravanam (~bloodletting with the help of surgical instruments)* includes the use of sharp instruments made up of metals and is further classified into 2 types, i.e., *prachan (~bloodletting by scarification or multiple incisions)* and *siraveedhan (~venepuncture)*. *AnuSastravisravanam (~bloodletting with the help of instruments as an alternative to surgical instruments)* uses instruments that are not made up of metal and are classified into 3 types, namely – *Shrigavcharan (~bloodletting using horn), Jalaukaavcharan (~bloodletting leech) and Alabu avcharan (~bloodletting using alabu). Acharyas* mentioned uses of each based on state of *dosha*, state of *rakta* and state of *rogi*. Blood vitiated by *vaat* should be treated by *shringa(~cow horn)* because cow's horn is *ushna (*hotness), *snigdha* (sliminess/unctuousness) and *Madura rasa yukta(~ have sweet taste)* which pacifies *vaat.* Whereas blood vitiated by *pitta* should be treated by *Jalauka (~leech)* because it sheeta (~coldness) as it resides in water and *madhura rasa yukta (~have sweet taste)* that pacifies *pitta*. Blood vitiated by *kapha* should be treated by *Alabu* because it is *ruksha (~dryness), teeshna (~sharpness)* and *katu rasa yukta (~spicy in taste)* that pacifies *kapha.* In case we see *Rakt Avastha (~condition of rakt)* then in *grathith* (~dense)

rakta (~blood) jalauka (~leech) can be used. If *rakt* is dense but at a particular site only, *prachaan* should be used, whereas if it is present in entire body, *siraveedhan* can be used. In case of *Supta (~numbness) rakta* in skin can be removed by *shringa, alabu or ghati (~bloodletting with the help of pot)*. In *sukumar* (~delicate) *rogi Shringa* and *alabu* can be used. In *param sukumar* (~extremely delicate), such as king, children, old aged people, timid, weak persons and in females *Jalauka avcharan* can be used. Whereas in strong people *prachan* and *siraveedhan* can be used [3].

MATERIAL AND METHODS

Search Strategy

To see how the regimens, such as *Raktamokshanam* mentioned in classical texts under the title *Ritucharya* are beneficial in today's scenario's historical data were taken from *Shushrut Samhita*, Charak Samhita and various relevant research works were taken into consideration to understand and correlate the effect of seasonal change on human body and prevalence of diseases. Also, haematological investigations were made from these works to understand how these diseases impact the blood and thus understanding how *Raktamokshanam* can be used to treat them.

Study Strategy

The author of this study independently assessed the selected, relevant studies and inferences from *Samhita*.

RESULT AND DISCUSSION

Historical data were taken from *Shushrut Samhita*, Charak Samhita and various relevant research works were taken into consideration after excluding other research works (because of them being invitro study, animal study, etc. and thus being irrelevant for this study). Here only clinical studies are included (Figure 1 is showing summary of articles searched and included in study for analysis and Table 1 shows summary of study pattern and findings of various pieces of research used in this narrative) and the findings obtained are understood as shown below.

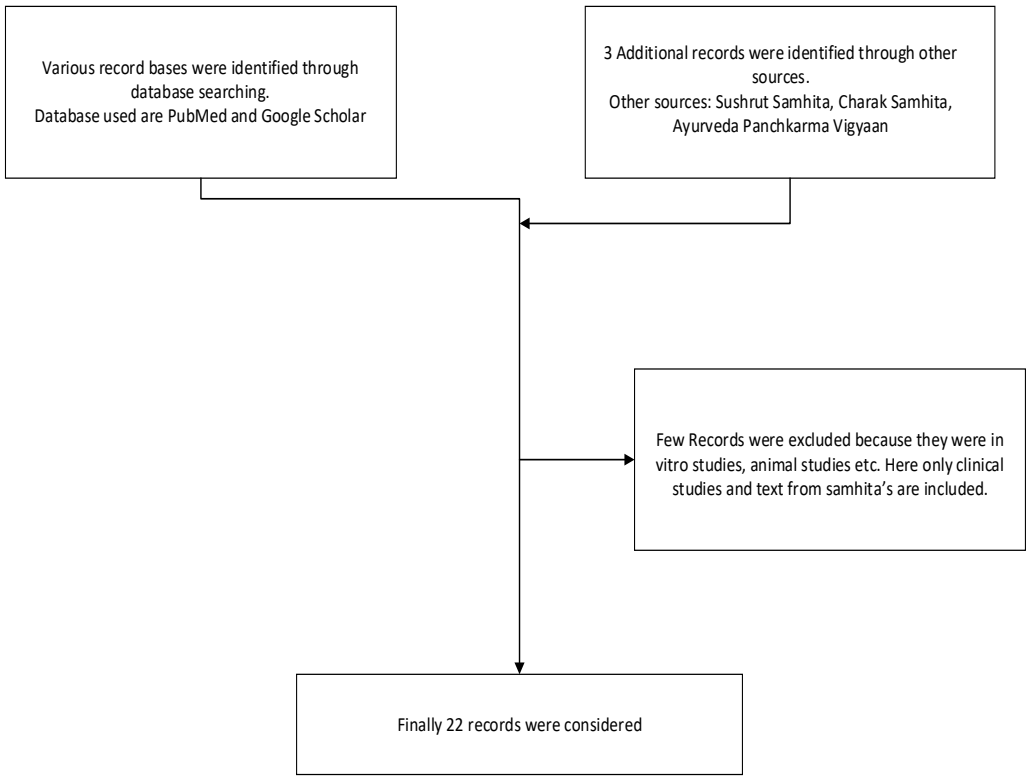

Figure 1. Showing summary of articles searched and included in study for analysis.

Table 1. Summary of study pattern and findings of various pieces of research used in this narrative.

S.N.	Population	Intervention	Comparison	Outcome	Time Interval
1.	A total average of 1692.5 patients per year visiting *Asthama Bhavan* were selected randomly.	Skin prick tests were done using allergen extracts, saline as negative control and histamine as positive control. After 20 minutes of skin prick the reactions were evaluated. The reactions were considered positive when wheal diameter was found to be more than 3 mm of size, or the diameter was with pseudopodia formation.		A seasonal peak in patient load was seen from August to October.	2 years between January 1, 2011 to December 31, 2012.
2.	A 26-year-old male presented with symptoms of sinusitis, rhinorrhea, pharyngitis, epiphora and fatigue. He also reported that he recently adopted a dog.	Complete blood count, Ig-E antibodies, and a percutaneous allergy skin test were prescribed by the physician.		The patient had an elevated white blood cell count specially eosinophils. Also, the patient showed increased Ig-E levels and positive skin test to dog dander but not to other allergens. This means that patient's body is showing immune response against dog dander (allergen).	
3.	25 hypertensive middle aged patients (15 males and 10 females) who have been receiving anti-hypertensive treatment for more than 5 years were selected randomly who were attending the Medical Out-Patients department of the Ramakrishna Mission Seva Pratishthan, Vivekananda Institute of Medical Sciences, Kolkata.	After clinical examination and history recording, arterial blood pressure was measured. The patient was given rest for 10 minutes and later 3 consecutive readings were made on the right or left upper limb and the mean value of 3 readings were taken. The patients were in sitting position while making the reading. The patient were then put on monthly follow up basis and same method was used in each follow up.		It was found that both systolic and diastolic changed significantly in accordance to the change in temperature. In winters, both mean systolic and diastolic blood pressure were more than those in summers.	12 months.
4.	102 hypertensive patients and 102 healthy blood donors were selected by convenient sampling technique. The study was done in Jugel and Hiwotfana Specialized University hospital, Harar, Eastern Ethiopia.	Individuals' socio-demographic and clinical information were collected. Blood samples were collected by Beckman Coulter DxH 500 analyzer for complete blood count. The data were analyzed using SPSS version 23.	For comparison between groups independent t-test and Mann-Whitney u-test were done. The median IQR value of white blood cell, hematocrit, hemoglobin, red cell distribution and mean platelet volume were significantly high in hypertensive groups when compared to control group.	The median values of WBC, HCT, RDW, HgB and MPV were significantly higher in hypertensive patients when compared with healthy control individuals.	3 months between January to March.

5.	Medical records of 3120 patients visiting dermatology clinics of Razi Hospital were selected randomly.	To see the difference in the distribution of the disease among 4 seasons one sample χ^2 test was used.		In all the seasons, patients aged 31 to 45 years were common except during autumn in which patients aged 16 to 30 were common. Most visits were observed during winters.	1 year, i.e., March 2019 to March 2020.
6.	Patients referring Pediatric Allergy and Immunology Outpatient Clinic of Medical Faculty Hospital, Istanbul Biruni University and the Pediatric Immunology and Allergy Diseases Outpatient Clinics of the Izmir S.B.U Tepecik Training and Research Hospital for Atopic Dermatitis were selected randomly. The sample size includes 167 children with atopic dermatitis and 170 healthy children.	Medical records, including gender, age, demographic data, blood tests, skin prick test, total IgE levels and SCORAD symptom score of children with atopic dermatitis were checked. Blood samples for complete blood count were analyzed by XT-1800i using EDTA as anticoagulant. Skin prick tests were done on volar forearm, face or back of patients and for skin prick tests histamine was used as positive control and physiological saline was used as a negative control.	Mean platelet count in patient group was higher than in control ($P = 0.003$). Mean PNR and mean ALC were also higher in-patient group ($p < 0.0001$). But mean ANC of control group was higher than the patient group ($P < 0.0001$).	Platelet count in patients with atopic dermatitis was found high and neutrophile to lymphocyte ratio rate was decreased.	7 months, i.e., between January 2022 to July 2022.
7.	Medical records of 3120 patients visiting dermatology clinics of Razi Hospital were selected randomly.	To see the difference in the distribution of the disease among 4 seasons one sample χ^2 test was used.		In all the seasons, patients aged 31 to 45 years were common except during autumn in which patients aged 16 to 30 were common. Most visits were observed during winters.	1 year i.e., March 2019 to March 2020.
8.	50 adult psoriasis patients (12 females and 38 males) and 50 healthy similar aged adults (7 females and 43 males) were selected. Patients diagnosed with psoriasis based on clinical and histopathological criteria were selected, whereas all others, such as those having cardiovascular diseases, inflammatory bowel disease,	To determine various haematological parameters blood was collected in K2EDTA vacutainer and the parameters were analyzed by Coulter LH780 Hematology analyzer. For statistical analysis IBM SPSS software (Version 21) was used.	Significant changes were seen in MPV, RDW (increased) and PLT (decreased) values in patients of both sexes when compared to control group.	Mean values of MPV and RDW were found to be higher, whereas platelet values were found to be lower in-patient group than healthy control group.	4 months, from May to September 2016.

	haematological disorders, etc. were excluded from this study.				
9.	Chicken pox cases in students residing at residential hostel of Ramgarh were selected randomly. A total of 259 cases were reported within the time interval of study	A descriptive record-based study was done for chicken pox cases referring to OPD. To estimate correlation between meteorological variations and prevalence of chicken pox cases Poisson's distribution was used.		Highest cases were reported between January and February.	4 years, from January 2015 to December 2018.
10.	60 patients (52 males and 8 females) aged between 15-50 years of both sexes were selected in the study randomly. It is to be noted that most of the patients were people serving the armed forces or belonged to their families.	History of illness, nature of rash and complete blood count were done on 1st presentation after which they were hospitalized and treated in isolation ward. Later, a complete blood count was done again after resolutions of lesions (about 2 weeks later). The data obtained was recorded.	On comparison with healthy individual's platelet count was significantly different.	In 1st investigation mean Hb = 13.4 g/dl, TLC = 6.1 x 10^9/l and platelet = 159.6 x 10^9/l were found. Whereas on recovery the findings were 14.1 g/dl, 7.0 x 10^9/l and 198 x 10^9/l were found. i.e., significant improvement in platelet count was seen.	
11.	76,636 ambulatory care visits were selected randomly.	Auto-Regressive integrated moving average (ARIMA) regression method was used to see effect of climatic factors on GERD cases.		A seasonal peak in cases of GERD were seen from October to December with a sharp decrease in January.	72 months, between 2001 to 2006.
12.	74 patients aged between 6 to 18 years who admitted to Karabuk Education and Research Hospital with GER symptoms. Also 35 healthy people were randomly selected in control group.	24-hour pH-metry test was done to diagnose patients representing GER complaints (Group 1). In addition, EGD (Group 2), Biopsies (Group 3) were also done. Laboratory tests include complete blood count, endoscopic biopsies and presence of H.pylori antigen in stool sample.	Monocyte counts, MPV and RDW showed significant differences between Group 1 and Group 2. MPV and RDW were lower in these groups when compared with healthy individuals (Group 3).	MPV and RDW were significantly lower in patients suffering from GERD when compared with healthy control group.	

Impact and Role of *Raktamokshanam* in *Sharad Ritu* on Allergic Rhinitis

Allergic rhinitis is an atopic disease characterized by symptoms of clear rhinorrhea, nasal congestion, sneezing, nasal pruritis and postnasal drip. The cases of allergic rhinitis have risen in the last 2 decades. The most frequent causes include allergens like dust mites, pollen, mold spores, and similar substances Allergic rhinitis is basically an immune response of the body (Ig-E mediated) against the allergen. The inhaled allergen causes inflammation which by a series of reaction produces histamine that induces sneezing and rhinorrhea. Other immune mediators are also released that produce other symptoms like nasal congestion and nasal edema [4].

To study the impact of seasons on allergic rhinitis, a study was done at Asthama Bhawan, situated in western part of Jaipur to check the variation in patient load of allergic rhinitis all year around from

January 2011 to December 2012. This was done to check the effects of pollen count in air, which was checked by pollen sampling, between January 1, 2011 to December 31, 2012, by Burkard 24 h spore trap system. Its findings were that there is a particular time in a year when these pollen grains are liberated in a large quantity and remain suspended in air. One such seasonal peak was observed between August to October, i.e., during *Sharad ritu*. During this peak September noted the highest number of cases. It was observed that Cheno-Amaranthaceae, Poaceae, Cynodon were the major plant families whose pollen grains were found in sampling during *Sharad ritu* [5].

Haematological Investigation of Allergic Rhinitis

Haematological parameters in allergic rhinitis were taken from a case study done on a 26-year-old male showing symptoms of rhinorrhea, epihora, sinusitis, pharyngitis and fatigue. He also reported that he recently adopted a dog. CBC, IgE antibodies and IgE anti-bodies and a percutaneous allergy skin test was done. The results showed increased WBC count especially eosinophils. This may be attributed to the body's immune response to an allergen. The RBC and platelet counts were within the normal range. The skin test was found out to be positive from which it can be concluded that patient's body showed an immune response to dog dander (allergen). Also, Ig-E levels were also high showing immune response of body. Thus, from this case study effect of allergens is seen on composition of blood [6].

Now let's see how *Raktamokshanam* advised in *Sharad ritu* can be useful for *Sharad ritu* related problems like allergic rhinitis. In *Raktamokshanam*, basically blood is let out with which excessive Ig-E and other lymphocytes causing hypersensitivity would be let out. *Rakt mokshana* can be done by *Jalauka* as its saliva secretes several enzymes which have anti-inflammatory properties. They also suppress mast cell mediated inflammatory reactions. Thus, helping in the problem.

Impact and Role of *Raktamokshanam* in *Sharad Ritu* on Hypertension

Hypertension (high blood pressure) is a condition when the pressure exerted by blood on walls of blood vessels is too high (140/90 or higher). Hypertension is considered as silent killer as it does not show many symptoms but if left uncontrolled can cause heart attack, stroke, kidney failure and sometimes even death [7].

To study the impact of seasons on hypertension a study was carried out in Kolkata, India to observe the variation in cases of stroke in winter and summer. To fulfil this purpose 25 patients suffering from hypertension who are under hypertensive treatment were selected randomly. All were middle aged, and their arterial BP were recorded monthly for a year. The patient was given rest for 10 minutes prior checking his/her blood pressure, and 3 consecutive readings were made from upper limb and the mean value of three readings was considered. The patients were in sitting position while taking the readings. From this study an increase in blood pressure was reported while going from summers to winters [8].

Haematological Investigation of Hypertension

A comparative study was conducted from January to March 2020 at Jugel and Hiwotfana Specialized University Hospital in Hara, eastern Ethiopia, to assess hematological parameters in hypertension. The study involved 102 hypertensive patients and 102 healthy controls, whose blood samples were analyzed using the Beckman Coulter DxH 500 analyzer for a Complete Blood Count. The data were then processed using SPSS version 23. Independent t-tests and Mann-Whitney U-tests were employed for group comparisons. The analysis revealed that hypertensive patients had higher median values for Hgb, WBC, HCT, MPV, and RDW compared to healthy individuals. These findings indicate that hypertension leads to reduced red cell deformability, increased WBC count, and enhanced platelet activation, potentially worsening microcirculation and leading to end-organ damage. Factors contributing to hypertension may include thrombosis, vasoconstriction, and increased blood volume.

Bloodletting can be done in *autumn season* so that change in blood pressure levels in winter season can be prevented. *Bloodletting* helps lowering blood pressure by firstly lowering the blood volume.

Bloodletting can be done by leech as saliva of leeches contains enzymes, such as hirudin which acts as thrombin inhibitor and useful in curing thrombosis and peripheral circulation disorders thus lowering blood pressure. Saliva of leeches also have Vaso-dilator effect thus also showing anti-hypertensive effect [9].

Impact and Role of *Raktamokshanam* in *Sharad Ritu* on Various Skin Diseases

These are the conditions that affect your skin. These conditions can lead to symptoms, such as rashes, itching, and inflammation. The primary contributors to many skin diseases are environmental changes and genetic factors. Skin diseases can be particularly challenging as they can influence the psychological well-being of patients. Let's explore some common skin diseases, their seasonal variations, and their effects on blood.

Eczema, also referred to as atopic dermatitis, is often described as the "itch that rashes," sarising from dry skin that results in a rash from scratching or rubbing. Individuals with atopic dermatitis typically exhibit an imbalanced inflammatory immune response, making their skin particularly sensitive to fragrances and allergens [10].

To study the seasonal impact on eczema a cross-sectional study was carried out at Razi dermatology hospital from 2019–2020 to determine the prevalence of Eczema and its seasonal variation. The data was obtained from the records of patients visiting the clinic. By analyzing the data, it was observed that seasonal peak in cases of eczema were seen in winters ($p < .05$). The most common cause for eczema is seasonal change, low humidity, smoke, pollutants, etc. [11].

Haematological Investigation of Eczema

A cross-sectional retrospective study was conducted to assess hematological parameters in eczema at the Medical Faculty Hospital of Istanbul Biruni University and the Pediatric Immunology and Allergy Diseases Outpatient Clinics of Izmir S.B.U. Tepecik Training and Research Hospital. The aim was to investigate the role of platelet count and mean platelet volume (MPV) as biomarkers in atopic dermatitis. The results indicated an elevated platelet count in patients with atopic dermatitis, along with a decrease in the neutrophil-to-lymphocyte ratio [12].

Psoriasis is an immune-mediated condition in which the body's immune system becomes overactive, causing skin cells to multiply rapidly. This results in scaly, inflamed patches of skin, primarily affecting areas, such as the eyebrows, scalp, knees, and other parts of the body. The symptoms of psoriasis can vary among individuals, but the most common include thick, red patches of skin covered with silvery-white scales that may itch or burn, usually found on the knees, scalp, elbows, trunk, palms, and soles of the feet. Additionally, patients may experience cracked, dry skin that itches or bleeds.

Impact of climate change on the patient load of psoriasis was studied by a cross-sectional carried out at Razi dermatology hospital from 2019-2020 to determine the prevalence of Psoriasis and its seasonal variation. The data was obtained from the records of patients visiting the clinic. By analysing the data, it was observed that seasonal peak in cases of eczema were seen in winters [11].

Haematological Variation in Psoriasis

To understand haematological parameters in psoriasis a case control study was done, and 10 haematological parameters were compared between 50 psoriatic patients and 50 healthy control subjects. The study aimed to investigate the relationship between the disease severity index in psoriasis patients and their hematological parameters. Conducted at Chettinad Hospital and Research Institute, Chennai, India, from May to September 2016, the results showed that psoriasis patients had elevated Mean Platelet Volume and Red Cell Distribution Width, while their Platelet Count was lower compared to the control group [13].

Chicken pox is a viral infection caused by varicella-zoster virus, which primarily affects children. It usually begins with a fever which is followed by itchy rash. The rash originates as red spot which soon turns into fluid filled blisters. Number of these blisters may vary. Many complications are associated with chicken pox, such as secondary bacterial infection of skin, bleeding manifestations, encephalitis, nephritis, thrombocytopenia, hepatitis, etc. [14].

Impact of climate on chicken pox was studied by a record-based study done using the reports of students who suffered from chicken pox in a Residential hostel of Ramgarh. The study includes students reporting OPDs between January 2015 to December 2018. To check the seasonal variation meteorological data was recorded for Ramgarh. It was found that the maximum number of cases were reported between January and February, i.e., the winter season [15].

Haematological investigation of chicken pox.

Change in haematological parameters in case of chicken pox was understood from a study in which 60 patients between age group 15–50 years were selected randomly and their complete blood count were done firstly on the presentation of disease and laterally after 2 weeks. The data obtained was analyzed and it was found out that the patients suffering from chicken pox had a relatively low platelet count which was seen to be improved after 2 weeks [16].

Most of the skin diseases like eczema, psoriasis occurs because of hypersensitivity towards the changing environment. This means in them levels of Ig-E and lymphocytes are increased to tackle the inflammation and immune response of the body. Prevalence of these diseases increases in dry conditions, i.e., in winters thus preventive procedures, such as *Raktamokshanam* is advised in *Autumn season* so that body can combat the changes occurring in environment. *Bloodletting* is seen to deliver miraculous results in skin diseases. In skin disease majorly *Bloodletting* is done by *leech* because of their anti-inflammatory action and normalizing the hypersensitivity of body by lowering Ig-E levels.

Impact and Role of *Raktamokshanam* in *Sharad ritu* on GERD (Gastroesophageal Reflux Disorder)

Gastroesophageal reflux (GER) refers to the back flow of the gastric contents toward the oesophagus following a meal, which causes severe symptoms and complications, collectively known as GER disease (GERD). One of the reasons of gerd could be presence of *Helicobacter pylori.* Common symptoms include burning sensation in chest, regurgitation of food, chest pain, etc. [17].

Seasonal variation in cases of gerd was studied by a study in which a total of 76,636 patient visits for the treatment of GERD were selected between 2001 and 2006. The auto-regressive integrated moving average (ARIMA) regression method was used to find the effects of climatic and monthly factors on GERD incidence. Peak in cases of GERD is seen in October to December followed by a sharp decrease in January [18].

Haematological Investigation of GERD

To understand haematological parameters in gerd a trial was done in Karabuk Education and Research Hospital on 74 patients suffering from GER along with 35 healthy controls. To diagnose the patients with GER symptoms a 24-hr pH-metry test was done. Also, complete blood count were done to find out the haematological measurements by BC-6800 Hematology analyzer. The results showed that patients with GER complaints had lower mean platelet volume and red cell distribution width compared to the control group [19].

Gastritis leads to poor absorption of substances, such as vitamin B12 which leads to alteration in composition of blood. Also, it is an inflammatory disorder thus immune response of body is triggered leading to increased lymphocyte count. In such a case, *Bloodletting* can be done by *Jalauka* because of

anti-inflammatory action of saliva of *leech*. Also, in this condition pitta of body is increased acc to *Ayurveda* which is let out with *rakt* during *Raktamokshanam* [20].

CONCLUSION

Raktamokshanam is treatment of half of the diseases as it is said to drain out the vitiated blood that was vitiating each tissue it supplied. In *Raktamokshanam*, leech therapy is considered better and is gaining lot of popularity these days because of its great results and as it can be done in delicate patients as well and it does not involve any pain. *Jalauka avcharan* is also gaining popularity because of its anti-inflammatory effect, anti-metastic effect, anti-hyperglycemic action, anticoagulatory effect, etc. As seen in above disorders *Raktamokshanam* is done basically for its anti-inflammatory effect during *Sharad ritu* either as a treatment or as a preventive measure. Thus, successfully fulfilling the aim of understanding preventive and curative aspects of raktmokshana in *Sharad ritu*. Thus, focussing on both the goals of Ayurveda, i.e., prevention of the health of the healthy and treatment of the disease of the diseased.

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