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Myelo Proliferative Disorder (Myeloid Leukemia) Vis- à -Vis Triyak Raktapitta and its Ayurvedic Management – A Clinico –Theoretical Review

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Introduction

Chronic Myelogemous Leukemia (CML) is very commonly observed myeloprlifarative disorder [1]. Other myeloprlifarative disorder includes Polycythemia Vera (PV), Essential Thrombocytosis (ET), Myelofibrosis (MF) [2,3]. WHO includes "chronic eosinophilic leukemia / hypereosinophilic syndrome" and chronic neutrophilic leukemia under "chronic myeloproliferative diseases [4,5]. The disease is characterized by increased proliferation of the granulocytic cell line. This changes the biochemic profile of blood. Blood examination reveals the presence of immature precursors, granulocytes, blast cells, etc [6]. these changes alters the viscosity of blood thus results in hyper-viscosity condition. The hyper-viscosity of blood occurs due to increase concentration of cellular contents or increase of plasma proteins. The conditions eventually results in clinical presentation of symptoms triggered spontaneous bleeding, retinopathy, and neurologic symptoms ranging from headache and vertigo to seizures and coma. This pathophysiological change is equivalent to that of lohitabhishyanda.

Lohitabhishyandaword is made up of lohita and abhishyanda. The dictionary meaning of the word abhishyanda is oozing, trickling, causing defluxions or serious effusions [7]. In reference to the ayurvedic the texts the objects that cause serious ailments are described as abhishyandi. The most important disastrous effect of the abhishyandi article is the obstructing the pathway i.e. srotorodha or margavarodha [8,9]. The resultant physiological impairment leads to ailment usually of serious nature. Dadhi is one such object, the use of dadhi leads to immediate vitiation of all the three doshas which may in turn lead to disease like prameha, etc. in the present context the quality change of rakta leads to improper functioning of rakta dhatu. The quantativeincrease of rakta dhatu due to vitiated pitta results in changes in quality which increases fluidity of rakta. The raktaoozes out from upper, lower orifices or in later stage from hair follicles.

Lohitabhiyanda is the change observed in the observed in pathological impairment. The abhisyanditva of raktain raktavaha srotos especially yakruta and plihais the most important change in the pathogenesis of the disease. This characteristic change imparts the fluidity in rakta. The increased fluidity of rakta comes, oozes out from the different orifices of body. The increased fluidity of rakta is by the virtue of pitta. Charaka describes that the pitta vitiated rakta takes longer time to coagulate [10]. This implies that the pitta by the virtue of its ushna (hot), tikshna properties is responsible to adhere the coagulation of blood. In the disease raktapittapitta gets the characteristic of rakta, this increase the bulk of rakta [11]. Sushruta also describes similar pathogenesis [12]. This increase of bulk is abhishyanda. Chakrapani opines that pitta which is seats in rakta dhatu gets converted into rakta i.e. it gets the property of rakta. Pitta and rakta are sharing similar properties excepting that of jeevan, which is the property of rakta alone [13,14].

Myeloid Leukemia Vis-a-Vis Raktapitta

The disease myeloid leukemia is presented with three distinct pathological conditions viz. chronic, accelerated, and blast. In chronic phase proliferation of mature cells is not compensated, the blood picture reveals mixed characteristic with mature cells and their precursors. The accelerated phase presents with the additional feature of cytogenetic abnormalities. The third phase is also known as blast crisis. In blast crisis or phase the peripheral blood is rich in blast cells and immature cells proliferate [6]. More than three fourth of the Patients are diagnosed in chronic phase only. The disease being progressive in nature the accelerated phase and blast phases supervenes within 3-5 years. The presence of Philadelphia chromosome in bone marrow cells is characteristic. Phenotypic presentation of the disease is proliferation of the granulocytic cell line without the loss of their capacity to differentiate. This results in granulocytosis, immature precursors in peripheral bloodwith occasional blast cells.CML occurs due to single specific genetic mutation of Philadelphia chromosome (>90% cases) i.e. cytogenetic aberration. The cytogenetic aberration is seen as reciprocal translocation of long arms of chromosome 22 and 9 (Figure 1-3). Thus it increases the tyrosine protein kinase activity. This leads to the phenotypic presentation of myeloid leukaemia [15-20].

The phenotypic presentation is the leucocytosis in the peripheral blood with presence of precursors and occasionally blast cells. This increases the viscosity of blood. This results in vascular stasis and resultant hypo perfusion.The other conditions that produces the hyperviscosity i.e. Hyperviscosity syndrome (HVS) are polycythemia, essential thrombocytosis, myelodysplastic disorders, plasma cell dyscrasias (the paraproteinemias), Walden strömmacroglobulinemia(excess immunoglobulin M – IgM), multiple myeloma (IgA and IgG_3 myeloma proteins), connective tissue diseases. This results in changes in cerebral blood flow that is exhibited as confused mental state (sludging). The soudging produces segmental dilatation that leads to haemorrhages due to interference of platelet function due tomyeloma proteins. The clinical sequelae can results in congestive heart failure, ischemic acute tubular necrosis, and pulmonary edema with multiorgan system failure and death [21,22].

The presenting symptoms are related to the triad of mucosal bleeding. The other symptomatic presentations which may be due to haemorrhage are visual impairment, neurologic symptoms complexes, cardiorespiratory symptoms, Constitutional symptoms, etc. The

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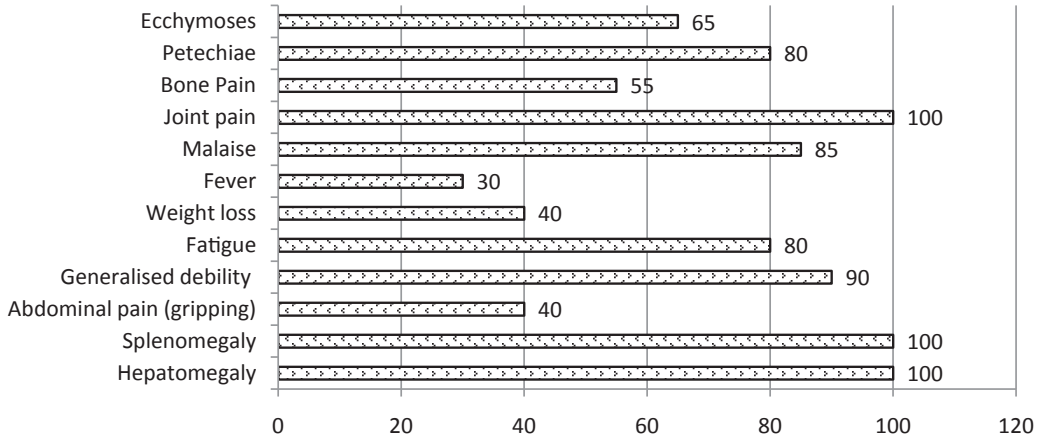


Figure 1

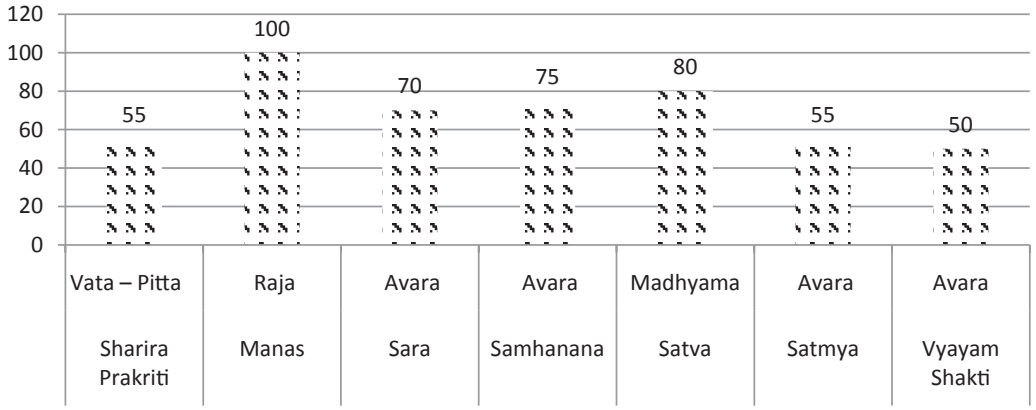


Figure 2

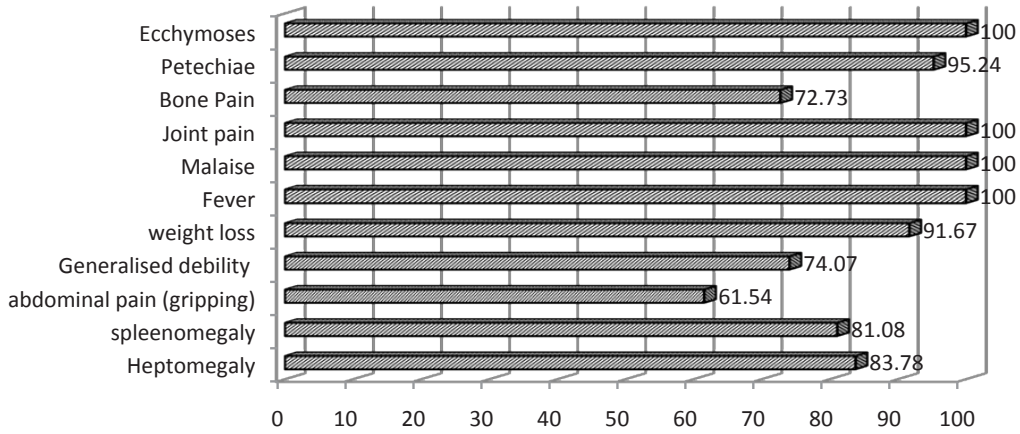


Figure 3: Effect of therapy on cardinal symptoms.

patient may present with bleeding tendency, (most common feature of hyperviscosity syndrome), which may be in the form of epistaxis, spontaneous gum bleeding, rectal bleeding, menorrhagia, bleeding after minor injuries or procedures, vertigo, headaches, seizures, somnolence progressing (stupor and coma), heart failure, shortness of breath, hypoxia, fatigue, and anorexia visual changes (blurred vision to vision loss), neurologic manifestations also known as Bing-Neal syndrome, vertigo, hearing loss, paresthesias, ataxia, etc.

The narration of the condition is comparable with that of the disease raktapitta. Charaka describes that pitta is responsible for the

disease. Indulgence (etiological factors) of atiushna (excessive hot things), tikshna (excessive over indulgence of irritants), nispav (a food preparation), maasha (black gram), kulath (type of food stuff), dadhi (curd), dadhimanda, katvar, amlika, kanji, vaaraahmamsa, mahishamamsha, aavikmamsa, matsya, pinyak, shshkashakha, mulaka, sura, pistana, etc [23], increases and vitiates the pitta,the vitiated pitta increases volume of rakta [24]. This increased volume is referred as lohitabhishyanda by Charaka [25]. Parasara opines that the immediate interaction of these factors with that of rakta increases the volume of rakta and thus results in raktapitta [22]. Astanghridya narrates that the pitta amalgamates with rakta and produces raktapitta [26]. The changes affects principally yakruta and pliha (mula of raktavahasrotas). Harrison's principle of medicine opines that "In most patients the abnormal finding on physical examination at diagnosis is minimal to moderate splenomegaly; mild hepatomegaly is found occasionally. Persistent splenomegaly despite continued therapy is a sign of disease acceleration. Lymphadenopathy and extramedullary myeloid tumors (granulocytic sarcomas) are unusual except late in the course of the disease; when they are present, the prognosis is poor". This clearly validates the ayurvedic description of the involvement of these organs. The rakta vitiated in the manner oozes out from different orifices including romakupa. The understanding the third route is important for the study of myelo-proliferative diseases.

Clinical symptomatology is due to characteristic change i.e. abhishyanda which is comparable with that of hyper viscosity state of blood. This pathological change clinically presented with lack of appetite, dyspepsia, nausea, sour eruptions, vomiting, swarbheda, lethargy, neuritis or burning sensation, bad breath (like that of blood), pain in joints, different sets of colour variations of organs and secretions. These symptoms are comparable with prodromal symptom of leukaemia.

Ayurvedic management of CML is quite effective, as the disease runs in chronic course with fatality period of 5-7 years from the occurrence of the disease. It is observed that the patients on ayurvedic management as only management or adjuvant therapy, the life span of the person increases. It is observed in the practice that the patient lives even for period more than 15 years after the diagnosis of the ailment and with general wellbeing and no other medical problems. Many cases of different varieties of cancer often attend the clinic of Dr. C. P. Shukla Jamnagar for the management of the ailment. Leukaemia of different varieties viz. Myeloid series – AML (Acute Myeloid Leukaemia), CML, Lymphoblastic leukaemia, lymphoid leukaemia – acute (ALL) and chronic (CLL), including blast crisis, Hodgkin's lymphoma, etc. is successfully managed by ayurvedic management. In the paper details of the cases treated with myeloid leukaemia will be discussed. In this paper the observation drawn from the 20 cases are presented. Details of other cases which are treated but due to technical limitations are not presented.

Intake of lavana, katu and madhur rasa was observed in all the patients, lavana and katu rasa are responsible for vitiation of pitta. Ruksha, ushna and laghu are the dominant gunas. Disturbed sleep pattern is observed in more than two third of the patients. Irregular bowel habit was observed in 60% patients. Dysuria was observed in half of the patients. 55% of patients were having vata – pitta sharirprakruti, rajas manasprakruti is observed in all the patients, avarasara is observed in 70% patients, avarasamhanana is observed in 75% patients, 55% patients were having avarasatmya, avaravyayama observed in half of the patients.

Observation

Diagnosed patients of attending the OPD of Dr. C. P. Shukla were examined and assessment was done from both viz. ayurvedic and modern parameters. These patients were prescribed the medicines

Sr. No.	Name	Botanical Name	Part used	Proportion
1	Shatavari	Asparagus racemosa	Roots	1 gram (1000 mg)
2	Madhuyasti	Glycerrizaglabra	Roots	500 mg
3	Dhatriloha	Generic ayurvedic formulation		250 mg
4	Muktapisti			250 mg
5	Kamdudha			250 mg

Table 1: Formulation used for the management of leukemia.

Sr. No.	Symptoms	Observed in % patients
1	Heptomegaly	100
2	Splenomegaly	100
3	Abdominalpain (gripping)	40
4	Generalised debility	90
5	Fatigue	80
6	Weightloss	40
7	Fever	30
8	Malaise	85
9	Joint pain	100
10	Bone Pain	55
11	Petechiae	80
12	Ecchymoses	65

Table 2: Symptoms observed in no. of patients.

Sr. No.	Property	Observed in % patients
RASA		
1	Madhur	100
2	Amla	20
3	Lavana	100
4	Katu	100
5	Tikta	40
6	Kasaya	35
Guna		
1	Guru	42
2	Laghu	58
3	Shita	35
4	Ushna	65
5	Snigdha	20
6	Ruksha	55
Sleep Pattern		
1	Sound	30
2	Disturbed	70
3	Divaswapna	0
4	Ratrijagara	0
5	Atinidra	0
Bowel Habit		
1	Regular	40
2	Irregular	60
3	Constipation	35
4	Loose	25
Urination		
1	Usual	45
2	Dysuria	55
3	Polyuria	25
4	Oliguria	20

Table 3: Personal history.

Sr. no.		% observed
ShariraPrakriti		
1	Vata	0
2	Pitta	0
3	Kapha	0
4	Vata – Pitta	55
5	Pitta – Kapha	35
6	Vata-Kapha	10
7	Vata – Pitta – Kapha	0
Manasa		
1	Satwa	0
2	Raja	100
3	Tama	0
Saratah		
1	Pravara	0
2	Madhyama	30
3	Avara	70
Samhananatah	Disturbed	70
1	Pravara	0
2	Madhyama	25
3	Avara	75
Satvatah		
1	Pravara	0
2	Madhyama	80
3	Avara	20
Satmyatah		
1	Pravara	0
2	Madhyama	45
3	Avara	55
Pramanatah		
1	Ayama (height) :	5.41ft
2	Bhara (weight)	54 kg
Vyayam Shakti		
1	Pravara	5
2	Madhyama	45
3	Avara	50

Table 4: DashavidhaPariksha.

accordingly. The modern medicine mainly hydrae (for treatment of CML) was not discontinued initially without altering its doses etc. Those patients not on modern medicine were managed only by ayurvedic medicines only (Table 1). The main drug prescribed for the treatment of CML was combination of the drugs that regulates agni by correcting pitta, and having rasayana and jivaniya properties. The combination was of shatavari (Asparagus racemosa), madhuyasti (glycarizaglabra), dhatriloha, muktapisti, kamdudha along with grapes juice three times a day. Along with these medicine the other medicine where added based of presenting feature. Detailed history is recorded in the regular case sheet with results and findings of all the experimental studies. Hepto-spleenomegaly was invariable present in all the patients, joint pain & bone pain, malaise was observed in almost all patients. The important observation is petechial haemorrhage was observed in majority of patients (Table 2 & 3). Blast crisis was observed in 5 patients. The average total leucocyte count was 21800/ cc, with present of the precursor in 18 patients and myeloblast in 5 patients. The above described formulation was continued for period of eight to ten months. The patients were advised regular follow up.

Treatment course of 10 months relieved almost all the symptoms, marked improvement was observed in the others. Hepatomegaly and splenomegaly corrected in almost 80%. Liver and spleen to be the organ

Symptom	BT	AT	% relief	Sd	se	t	P
Heptomegaly	10.57	1.71	83.78	33.50	7.49	11.19	<0.001
spleenomegaly	10.57	2.00	81.08	32.42	7.25	11.19	<0.001
abdominal pain (gripping)	3.71	1.43	61.54	8.66	1.94	31.78	<0.001
Generalised debility	7.71	2.00	74.07	21.61	4.83	15.33	<0.001
weight loss	3.43	0.29	91.67	11.90	2.66	34.43	<0.001
Fever	1.71	0.00	100.00	6.50	1.45	68.83	<0.001
Malaise	6.86	0.00	100.00	25.94	5.80	17.24	<0.001
Joint pain	10.29	0.00	100.00	38.89	8.70	11.50	<0.001
Bone Pain	6.29	1.71	72.73	17.30	3.87	18.80	<0.001
Petechiae	6.00	0.29	95.24	21.61	4.83	19.71	<0.001
Ecchymoses	3.71	0.00	100.00	14.05	3.14	31.83	<0.001

Table 5: Effect of therapy.

of the raktavahasrotas is affected in the disease, the drugs corrected srotavaiguna and thus the mula of raktavaha srotos also improved considerably. The result is significant on statistical ground that suggests the obtained result is not by chance. Fever, malaise, and joint pain the constitutional signs relived in all the patients. This indicates the improvement of general wellbeing and also the general health is improved. Moreover this is indicative that the drug doesn't correct only the biochemical values but also corrects the pathological change. Ecchymosis was relieved in all the patients and showed cent percent improvement. This is the very important sign for correlating the disease with that of raktapitta. The improvement in the symptom is suggestive that the drugs correct the raktadusti and pitta dusti. This implies that the hypothesis of correlation is correct. Similarly the triyakraktapitta which may be of Petechial hemorrhage too improved and almost corrected (95.24% improvement) is observed. The other symptoms also showed decline. All the results stand significant on statistical grounds. In pathological parameters blast cells are observed to be completely eliminated with the therapy (Table 4 & 5 and Figure 4 & 5). The main presenting characteristic of increased leucocyte count was markedly improved. 65.61% relief was observed, leukocytosis is corrected with mean leucocyte count of 7390/ cumm. Hemoglobin (Hb) increased by 47.99% though the Hb concentration is slight lower mark only. The normal hemoglobin concentration is not completely achieved but to a great extent the improvement is observed. Total erythrocyte count also increased by 63.13%. Both suggests that the raktadusti is relieved. The other cellular count remained stable. This is suggestive of correction of raktadusti.

It is advocated by Acharya Charaka that the drug/ management should decrease the pain (disease, symptoms of disease and correct the dosha-dushyasammurchana – correct pathological change local & systemic and samprarptivighatana i.e. revert the doshas and dushyas in its original state) but in no case should increase or vitiate the others (Table 6). This can be evaluated by evaluating the deha bala, chitta bala and agni bala of the patients. It was observed that the drugs improves the all the three thus general wellbeing of patient is improved (Table 7). It is said that "physician can't add year to one's life but can increase life to one's year" i.e. improvement of wellbeing can be improved but stating anything about increasing life expectancy is somewhat premature. All the parameters are statistically significant. An improvement of 61.54% was observed in Sthir Upachita Mansa, 70.59% Swar Prasada, 68.75% Varna Prasada, 77.27% Bala. In chitta bala an improvement of 72.73% was observed in Twak (touch sensation), 60.00% Chakshu (Visual activity), 62.50%, Srotra (Hearing), 66.67% Jihva (Taste), 57.14% Payu (bowel activity), 66.67% Upastha (micturition), 72.73% Mana & Buddhi. It was observed that 61.76% improvement in Ruchi Aahar Kale, 66.67% KshudhaBodha, 75.68%SamyakJharana, 79.49% Feeling

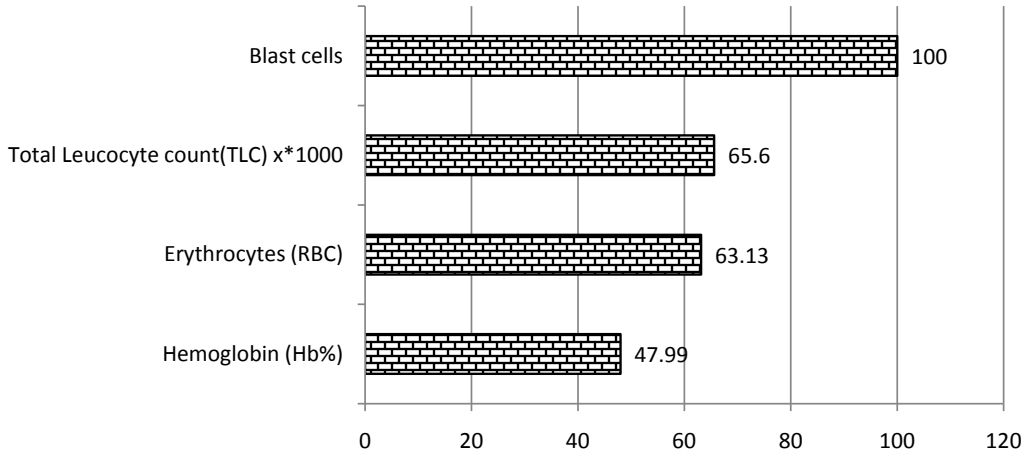
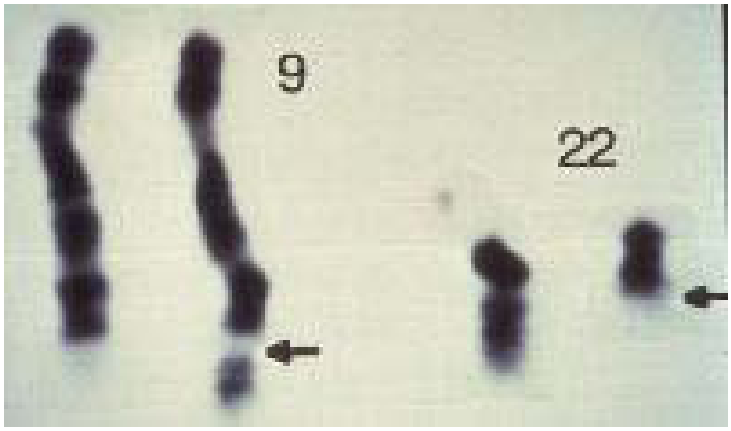


Figure 4: Effect on pathological parameters.



[Karyotypic abnormality of chronic myelogenousleukemia.Reciprocal translocation of 22q to the lower arm of 9 and 9q. Courtesy of Peter C. Nowell, MD, Department of Pathology and Clinical Laboratory of the University of Pennsylvania School of Medicine.]

Figure 5

of well Being, 70.00% Vata Mukti, 66.67% Mutra Mukti, 62.50% Purisha Mukti, 62.50% Reta sMukti.

Discussion

1. Lohitabhisyhand is the important characteristic change (visheshtasammurchana) observed in the disease.
2. This characteristic change imparts all the characteristics of rakta to pitta, thus pitta increased in the manner increases volume of rakta. The increased volume of rakta than oozes out from various orifices. The state is comparable with that of hyperviscosity syndrome.
3. Hyperviscosity in blood is also observed in other diseases. The cause of the hyperviscosity state may be classified as (on the basis of pathological change) 1) increase in cellularity (increased number of cells viz. myelo proliferative disorder,polycythaemia, Hodgkin's lymohoma, etc.), and 2) changes in serum concentration esp. protein.
4. Hyperviscosity state results in bleeding tendency which resembles the state of raktapitta. Moreover hepatospleenomegaly is observed invariably in the disease which also justifies the similarity with raktapitta. It may be here inferred that raktapitta is group of clinical ailments with bleeding tendency, with lohitabhishyanditaas the important characteristic pathological change.
5. The lohitabhishyanda is results of pitta masking the characteristic of rakta (pitta turns to red colour), increases rakta (quantative), this increases the amount of rakta. This is lohitabhishyanda.
6. The symptomatology of myeloid leukemia is comparable with triyakraktapitta.
7. "Pratimargamjayate" is the line of treatment of raktapitta i.e. vamana for adhogaraktapitta and virechana for urdhvagraktapitta. In triyagraktapittaraktasrava from romkupas which may be interpreted as petechiaeand/or ecchymoses. In both cases the bleeding may remain subcutaneous only, yet this is oozing of blood from romkupas and thus it is triyakraktapitta.
8. Rakta shuddhi kara dravyas and pitta haradravayas needs to be employed for managing the condition.
9. Calcium preparation are prescribed by charakasamhita to be the principle medicine for the disease, charaka advocates the use of vaidurya, mukta, mani, gairik, shankha, hem, malakodak, is to be consumed with draksha juice. In the above listed medicine most

	BT	AT	% diff	Sd	se	t	p
Hemoglobin (Hb%)	7.58	11.21	47.99	78.54	17.56	2.73	<0.01
Erythrocytes (RBC)	2.50	4.07	63.13	34.03	7.61	8.30	<0.001
Total Leucocyte count(TLC) *1000	21.50	7.39	65.61	10.73	10.99	5.63	<0.001
NEUTROPHILS	80.20	75.90	5.36	93.04	20.80	0.26	NS
ESOPHINILS	0.50	0.40	20.00	2.18	0.49	41.01	<0.001
BASOPHILS	0.40	0.35	12.50	1.10	0.25	50.73	<0.001
Lymphocytes	18.70	23.25	-24.33	98.43	22.01	-1.11	NS
Monocytes	0.20	0.10	60.38	2.54	0.57	106.18	<0.001
Blast cells	0.25	0.00	100.00	5.42	1.21	82.54	<0.001

Table 6: Effect on pathological parameters.

Parameters	BT	AT	% relief	sd	se	t	p
SthirUpachita Mansa	13.46	5.18	61.54	30.29	6.77	9.09	<0.001
SwarPrasada	11.73	3.45	70.59	30.29	6.77	10.42	<0.001
Varna Prasada	11.04	3.45	68.75	27.76	6.21	11.07	<0.001
Bala	15.18	3.45	77.27	42.91	9.59	8.05	<0.001
Twak (touch sensation)	3.80	1.04	72.73	10.11	2.26	32.18	<0.001
Chakshu (Visual activity)	1.73	0.69	60.00	3.80	0.85	70.54	<0.001
Srotra (Hearing)	2.76	1.04	62.50	6.32	1.41	44.19	<0.001
Jihva (Taste)	2.07	0.69	66.67	5.06	1.13	58.87	<0.001
Payu (bowel activity)	2.42	1.04	57.14	5.06	1.13	50.46	<0.001
Upastha (micuration)	3.11	1.04	66.67	7.59	1.70	39.30	<0.001
Mana&buddhi	3.80	1.04	72.73	10.11	2.26	32.18	<0.001
RuchiAahar Kale	11.73	4.49	61.76	26.51	5.93	10.42	<0.001
KshudhaBodha	11.39	3.80	66.67	27.77	6.21	10.74	<0.001
SamyakJharana	12.77	3.11	75.68	35.34	7.90	9.58	<0.001
Feeling of well Being	13.46	2.76	79.49	39.13	8.75	9.09	<0.001
VataMukti	3.45	1.04	70.00	8.85	1.98	35.39	<0.001
MutraMukti	3.11	1.04	66.67	7.59	1.70	39.30	<0.001
PurishaMukti	2.76	1.04	62.50	6.32	1.41	44.19	<0.001
RetasMukti	2.76	1.04	62.50	6.32	1.41	44.19	<0.001

Table 7: Effect of therapy on deha bala, chitta bala, agni bala.

of the ingredients are chemically composed of calcium. Calcium plays important in clotting. Thus the same may be used in the management.

10. Raktapitta being the disease of raktapradoshaja, the management must include rakta – pitta haradravayas. Shit, madhur rasa pradhana drugs are important in management of disease. Shatavari is one such drug.

11. Madhuyasti is the drug which possesses the property of pitta shaman;sushruta describes the use of madhuyastiin management of vrana. Thus the medicine is used in the formulation.

12. Dhatriloha is the formulation not found in majority parts of India, this is medicine primarily used in Gujarat only. It contains lohabhasma, guduchi, amalaki, and bhavana of guduchiswarasa. The formulation is pitta shamak and raktashudhikara.

13. Vehicle selected is draksha juice, draksha juice is sweet in taste and pitta sravaka, it eliminates and pacifies pitta. Thus the vehicle helps in potentiating the effect of the drug.

14. The relief is observedin all the cases of CML, many of the cases are under regular follow up also. The blast crisis is also managed by the medicine.

15. The patients may or may not require the modern management for controlling the increased cellularity. The onset of effect is varying which may be due various factors.

16. Acharya Charaka advocates that the drug/ management should be planned in a manner that it only relieves the disease i.e decrease the pain & agony (disease, symptoms of disease and correct the dosha-dushyasammurchana – correct pathological change local &systemic and samprarptivighatana i.e. revert the doshas and dushyas in its original state) but in no case should increase or vitiate the others. Dosha dushyasammurchana is result of the amalgamation of dosha and dushya. It may be simple or may be complex. Impartation of characteristic of dosha in a particular manner leads to a specific disease. Here in the case the disease originates from chiefly from rakta and pitta. The same combinations of the originating components are also observed in pandu, kamla. But in the former case the amalgamation results in lohitabhisyanda, which is not observed in pandu and kamla though the originating dosha and dushya are identical. So correction of Dosha-dushyasammurchana is essential for regaining the equilibrium & state of homeostasis.

17. This is to be evaluated by evaluating the deha bala, chitta bala and agni bala of the patients. These needs very minute observations, but can't be neglected. This is integral part clinical research and clinical practice too.

18. Drug shatavari, yastimadhu, dhatriloha possess pitta haraprabhava. This corrects pitta which is responsible for the disease. Mukta used in formulation (muktapisti) in the form of pisti decreases pitta and also corrects dusti of rakta dhatu. Mukta is shit in nature, which is potentiated by pisti preparation. Kamdudha and mukta both are rich in calcium helps in coagulation. The formula is prescribed with grace juice as a vehicle which is pitta saraka. Virechana being the choice of modality in the disease of pitta may be used in the disease also.

19. Charaka opines that "pratimargamjayet" is the therapeutic principle, but in case of triyakraktapitta, where raktasrava occurs from different orifices, any one procedure may be harmful, so the drug that possesses mild laxative action, that eliminates pitta gradually is of help and may be used for the management. Charaka opines in kamala chikitsa that mriduvirechana is to be done, that justifies the use of draksha in the present medicine. More over draksha is prescribed by charaka in management of raktapitta.

20. The most important observation observed in the results is that the hyperviscosity state is relieved i.e. a massive decline in leucocyte is observed, and leucocyte count returned to its normal range. One of the cause hyperviscosity state is increased cellularity, the formulation corrects leucocytosis, implies that it corrects lohitabhishyanda, which is the result of dosha-dushyasammurchana.

21. It is observed that hepatomegaly & splenomegaly is relieved almost completely. These two organs are the mula of raktavaha srotos, improvement in the function and decrease in their size implies that the function of raktavaha srotos is improved which is result of correction of dosha-dushyasammurchana.

22. Bleeding ceases which is justified by the decline symptom of petechial haemorrhage, ecchymosis. This are the sign of triyakraktapitta and decline in these symptoms suggest that the drug corrects raktapitta and thus the diseae myeloid leukemia.

23. Positive observation in deha bala, chitta bala and agni bala opines that wellbeing of patients are improved.

Conclusion

1. It may be concluded that the raktapitta is comparable with hyperviscosity syndrome.
2. Hyperviscosity syndrome is due to increased cellularity and changes in protein.
3. Hyperviscosity syndrome resembles with lohitabhishyanda which is observed in raktapitta.
4. Shatavari, yastimadhu, are the drug of choice in management of raktapitta.
5. Relief is observed in almost all symptoms in disease.
6. The drugs improves general wellbeing, general health is improved with relief in symptom.
7. It may be concluded that myeloid leukaemia is a disease which may be included in wide spectrum of other disease that comes under raktapitta.
8. Increase in life expectancy can be proven by studying on large group.

Suggestion

Clinical trial with large group with different drugs and procedures need to be plan, with single drug trial, blind trial, double blind trials, cross over studies, with onset of effect, management in crisis etc. is to be studied. As far as the best knowledge parameters for evaluation of life expectancy are not full proof, which need to be framed ayurvedically and then evaluation on those parameters are to be made to come up with the results. So that true scientific details with all essence of ayurved can be presented before scientific community and the effectiveness of ayurveda in management of dreaded disease like leukemia.

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