



Ayurvedic Management of Chronic Pancreatitis in Adolescent Girl: A Case Report

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Report

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ABSTRACT

Background- Chronic pancreatitis is the primary life-threatening nutritional & metabolic condition of gastrointestinal system that becomes a significant threat to the children's growth and induces educational loss due to recurrent hospitalization. Its mortality rate in childhood is up to 10%. Malnutrition is one of the primary causes of pancreatitis in children. Modern science provides various types of medical and surgical therapies for Chronic pancreatitis, but it is realized that more research is needed for its management satisfactorily.

Aim - To study the efficacy of Ayurvedic management of chronic pancreatitis induced due to Malnutrition in an adolescent girl.

Material & Methods- It is a single case study of 12 years old teenage girl who was presented herself predominantly with pain in the epi-gastric region (recurrent attacks-especially after intake of the fatty or heavy meal), tenderness in the epi-gastric area, loss of appetite, fever on and off, general malaise, loss of weight, constipation (intermittent), anxious & uncomfortable mental irritation since one & half month. After taking conservative treatment from modern science for one &

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a half months, she did not get satisfactory relief & therefore; she was advised to under ERCP. However, the patient & her relative was not willing to undergo the same, that's they approached *Panchakarma* OPD. After examination, she was advised for *Shodhana(Panchtikta & Guduchyadi Niruha Vasti)* & *Shamana Chikitsa(Amruttotara Kashayam, Arogyavardhini Vati, Kumariasava; Dhanvantara Kashayam, Avipattikar Churna), Panchatikta Ghrta with Vasant Kusumakar Rasa-10tab+Guduchi Satva- 20gm + Shatavari Churna- 15gm+ Ashwagandha Choorana-15 gm with honey.*

Observation & Results- After 16 months of regular treatment, the patient has become entirely symptom-free & to date, there was no need for hospitalization. There was no educational loss due to ill-health.

Discussion:-Utilizing the basic concepts of *Ayurveda(Nidanpanchaka), Jirna Jwarahara, Yakrutottejak, Pramehaghna,* or pancreatic-protective, *Mrudu Virechak, Bruhana (Shamana & Bruhana Snehapana), Rasayana Chikitsa* was planned in this case which showed the promising result.

Conclusion- *Ayurvedic* management with *Shodhana & Shamana Chikitsa* based on the fundamentals of *Ayurveda* is effective in Chronic pancreatitis induced due to Malnutrition in children, which may become a ray of hope for pediatric patients.

Keywords: *Chronic pancreatitis; malnutrition; adolescent; shodhana; shamana; fundamentals; ayurveda.*

1. INTRODUCTION

Pediatric Pancreatitis or inflammation of the pancreas is an underdiagnosed disease with variable etiology. Chronic pancreatitis (CP) is the leading life-threatening, nutritional, hepatobiliary & metabolic condition. In the past 10-15, years the incidence of pediatric pancreatitis has increased up to 3.6-13.3% cases per 100,000 children & its mortality rate in childhood is up to 10 % [1]. There are 20% of cases of idiopathic CP among all sorts of CP patients. It is a significant threat to the growth of the children and induces educational loss due to recurrent hospitalization.

Its probable causative factors include alcohol, genetic, mutation, malnutrition factors, oxidant stress, and trace element deficiency. Among them, Malnutrition is one of the primary causes of pancreatitis in children. Its therapy is limited to painkillers, intravenous fluids, and pancreatic enzymes. In the absence of a substantial cure, alternative medicine, especially *Ayurveda*, has shown promising & sustainable results in treating Recurrent Acute/Chronic Pancreatitis (RA/CP).

1.1 Need of the Study

The treatment of this entity is challenging due to its life-threatening nature, its irreversible and progressive nature of the illness, limitations of traditional therapy & substantially high cost of surgical approach, resistance to antibiotics. Therefore, it is the need of the hour to search for

supportive, effective, and safe treatment in *Ayurveda*.

2. MATERIALS AND METHODS

A single Case Study of 12 years old female patient belonging to the Upper Middle class was approached from Wardha, Maharashtra. Her O.P.D. No. was 1708040044. Chief complaints of the patient with their severity & onset of duration are depicted in Table 1.

2.1 History of Present illness

Detail history of the patient is narrated in Table 2. According to the statement of her mother, the patient was normal before two years. Suddenly, she developed acute pain in the epigastric region, which was aggravated after intake of fatty food & got relieved after bending forward. After hospitalization for three days, she was diagnosed with acute pancreatitis & was advised to take conservative treatment for one & a half months. However, she had recurrent attacks of similar symptoms between this period & got hospitalized three times. The pain has no specific periodicity. She did not get satisfactory relief even after conservative treatment & therefore, she was further advised to under for ERCP. However, the patient & her relative was not willing to undergo the same, that's they approached *Panchakarma* OPD two years. After her examination following findings is coming out.

2.2 Examinations and Investigations

Investigations were done, and previous treatment details of the patient are provided in Table 3. Findings of examinations of the patient as per Ayurveda's & modern perspective done are explained in Tables 4 & 5.

2.3 Pathophysiology of the Disease

The pathophysiology of the disease is explained in Fig. 1.

2.4 Diagnosis

Agnyshaya Vikruti Jjanya Grahani with *Jirna Jwara* (Juvenile Chronic Necrotizing Pancreatitis).

2.4.1 Differential diagnosis

Chronic cholecystitis
Peptic ulcer disease

2.5 Treatment Plan

The details of the treatment plan of *Shodhana & Shamana Chikitsa* are given in Tables 6,7 & 8.

2.6 Therapeutic Outcome

Therapeutic outcomes obtained after a full course of both *Shodhana & Shamana Chikitsa* for one year & 4 months are mentioned in Table 9. After regular treatment for consecutive 16 months, the patient became ultimately symptoms-free. Till date, there was no need for hospitalization after starting *Ayurvedic* treatment. No educational loss between this duration has occurred.

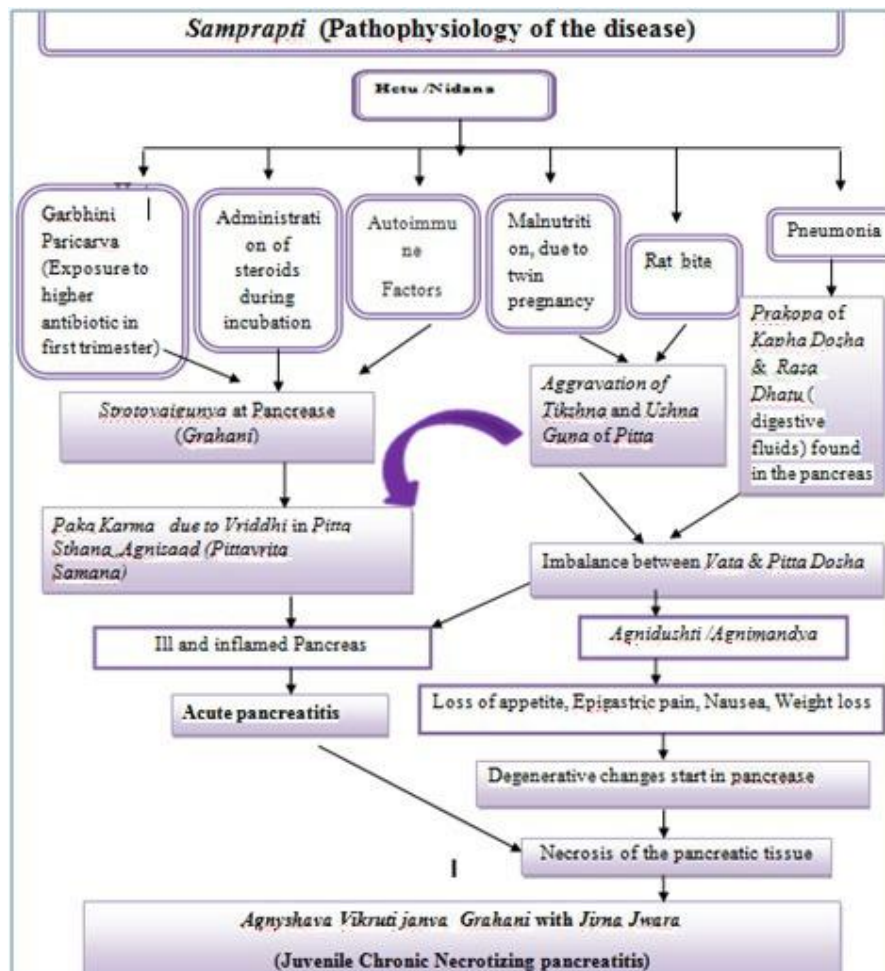


Fig. 1. Pathophysiology of the disease

Table 1. Chief complaints

S.N.	Symptoms	Severity	Duration
1	Recurrent episodes of pain in the epi-gastric region (recurrent attacks-especially after intake of the fatty or heavy meal)	Weekly once	Since four months
2	Tenderness over the epigastric region	2+	
3	Loss of appetite	4+	
4	Fever on and off	-	
5	General malaise	4+	
6	Loss of weight	4+	
7	Constipation (intermittent)	4+	
8	Anxious & uncomfortable	4+	
9	Mental Irritation	4+	

Table 2. History of the patient

S.N.	Heads	Details of the patient
1	BIRTH HISTORY	<ul style="list-style-type: none"> • Twin Delivery (Hospital) • History of Incubation for 20 days due to low weight-Malnutrition due to twin pregnancy
2	Past History	<ul style="list-style-type: none"> • History of recurrent hospitalization since four months • History of pneumonia at the age of 3 years • History of rat-bite at the age of 4-5 years of age • Weight loss since four months • No H/o significant surgical illness • No H/o trauma, drugs, No H/o Gall stones/Mumps, Varicella • No history of any allergies or consumption of any drug or scorpion bite
3	Family History	<ul style="list-style-type: none"> • Father- Not specific • Mother: History of Enteric fever (at the first trimester of pregnancy managed with oral antibiotic) • Siblings: Normal
4	Personal History	<ul style="list-style-type: none"> ❖ Diet: Mixed diet ❖ Sleep: Sound <p>No history of any addiction</p>
5	Immunization history	➤ Immunized at a government hospital as per schedule
6	Menstrual history	<ul style="list-style-type: none"> ➤ Menarche at the age of 12 years ➤ Menses regular, painful with scanty bleeding

3. DISCUSSION

According to modern's perspective, chronic pancreatitis in children is considered autoimmune [2]. On the other hand, according to Ayurveda's perspective, such clinical condition can be correlated with *Pittaja Guluma*, *Aavrta Samana Vata*, or *Grahani*. The basic cause in the pathophysiology of this condition is an imbalance between Vata & Pitta Dosha. Especially *Pachaka Pitta* & *Saman Vayu* (bile, pancreatic juice, and intestinal secretions) are considered the main *Dushya* in its pathology. The vitiation of both these may be carried out due to the aggravation of Tikshna and Uushna Guna of Pitta due to food habits with the same

kind of nature. *Ushna Tikshna Vriddhi Ahara & Vihara*, which led to *Paka Karma in Grahani* (as it is the prime site of *Agni*) due to *Pitta Prakopa*, i. e. disturbances in pancreatic enzymes, e.g., trypsin and chymotrypsin [3]. Such ill and inflamed part of the pancreas leads to first phase Pancreatitis & results in aggravation of *Rasa Dhātu* (digestive fluids) found in the pancreas, which later turns into specific degenerative changes in the pancreas due to chronicity [4]. Due to such degenerative changes, the endocrinal part of the pancreas that produces several important hormones, including insulin, glucagon, somatostatin, and pancreatic polypeptides, is necrosed. Ultimately, the homeostasis of blood glucose, the control of

upper Gastrointestinal (GI) motility and function, and its exocrine part also get hampered, leading to impairment of digestion of carbohydrates, proteins, and lipids.

The treatment principles of *Tikshnoshna Pitta*, *Pittaja Gulma*, *Aavrita Samana Vata*, or *Pittaja Grahani* can be applied in such cases considering the above-said pathological changes

& involvement of *Dushya*. Therefore, *Vata –Pitta Shamaka*, *Dipana –Pachana*, *Jirna Jwarahara*, *Yakrutottejak*, *Rasayan*, *Pramehaghna*, or pancreas-protective, *Mrudu Virechak* & *Laghu* but *Santarpana Chikitsa* in the form of *Bruhana Snehapana Chikitsa* was adopted in this case. The probable mode of action of the treatment can be justified as follows.

Table 3. Investigations done and previous treatment details of the patient

Date	Type of investigations	Impression /result	Treatment taken
23/09/2016	Serum Lipase Serum Amylase Hb% - WBC Urine Exam	397 IU/L 305 IU/L 9.7 gm/dl 22600 WNL	Hospitalization in a private hospital under a gastroenterologist IV Antibiotics & Anti-spasmodics
27/09/2016	CECT Abdomen:	Ill-defined non – enhancing hypodense area in the tail of Pancreas with surrounding inflammatory changes S/o Focal Necrotic Pancreatitis involving tail of Pancreas. Few small areas of Necrosis are also noted in the neck of the Pancreas.	Tab Fobian 1 BD * 30days, Tab Ivoral 1 HS, Tab Hyocimax P SOS, Tab Antoxid 1 OD Laxopeg Sachet 1 HS, Tab Pantocid- L 1OD, For seven days Advised High fiber diet Advised ERCP after the further attack
08/10/16 to - 20/10/16	-	-	Hospitalization two times between fortnight Conservatively managed
Date	Type of investigations	Impression /result	Treatment taken
8/11/2016	USG Abdomen of Upper Abdomen Hb% MCV Monocyte ESR Serum Calcium & Triglyceride	No significant abnormality 9.50 gm/dl : 53.00 01% 10 mm/1 st hr WNL	The patient was on conservative treatment
28/01/2017	-	-	Ayurvedic treatment started
08/05/2018	-	-	Ayurvedic treatment stopped

Table 4. Ashtavidha parikshana

S.N.	Type of Head	Observation
1	<i>Nadi</i> (Pulse)	96/min
2	<i>Mala</i> (Stool)	<i>Asamyak</i> (Irregular & Unsatisfactory)
4	<i>Mutra</i> (Urine)	4-5/day, 2-3time/night
4	<i>Jivha</i> (Tongue)	<i>Sama</i>
5	<i>Shabda</i> (Speech)	<i>Spashta</i> (Clear)
6	<i>Sparsha</i> (Touch)	<i>Ushna</i> (Normal)
7	<i>Druka</i> (Vision)	Good
8	<i>Akruti</i> (Posture)	<i>Krusha</i>

Table 5. Examinations specific to diagnosis according to modern science

S.N.	Type of examination	Findings
1	General examination	<ul style="list-style-type: none"> • Pallor + • Icterus /clubbing absent • No any lymphadenopathy • RR -25/min • Temperature -38 ° F • Weight: 31.4 kg (Normal 41.5Kg) • Height: 137 cm (Normal 149.8cm) • BP 114/70 mmHg
2	On Palpation:	P/A: <ul style="list-style-type: none"> • Slightly distended abdomen+ • Tenderness in epigastric region ++ • Muscle gourd & rigidity in the epigastric region was present • No rebound Tenderness • Fluid thrill absent • Murphy's sign –Negative • No organomegaly, No free fluid • Her other system examinations revealed no abnormality
3	On percussion :	<ul style="list-style-type: none"> • A tympanitic note was present • Shifting dullness absent
4	On Auscultation	<ul style="list-style-type: none"> • Bowel sound present +

Table 6. Type of Shodhana Chikitsa

S.N.	Shodhana Chikitsa	Drug	Dose with Anupana	Duration
1	Shodhana Poorva Dipana Pachana	Syp Annarmix (Nagarjuna)	10 ml before each mea with Luke warm water	15 days
2	Sasneha Niruha Vasti with Panchtikta Vasti	500ml Qwath(Guduchi+Vasa + Nimba, Patola, Kantakari) + Dhanvantar Ghrita+Panchatikta Ghrita (each 20ml) +Honey 10 gms +Saindhava 5 gms	2 Niruha Vasti followed by 1 Anuvasana Vasti with Dhanvantara Taila for	consecutive 15 days
3	Guduchyadi Niruha Vasti	Guduchi, Nimba, Dashmoola, Ashwagandha, Musta Kwatha 800ml) + Dhanvantar Taila- 40ml++Honey ten gms +Saindhava five gms	2 Niruha Vasti followed by 1 Anuvasana Vasti with Dhanvantara Taila	consecutive 15 days

Dipana-Pachana induced by Syp Annarmix(Nagarjuna) and Syp Digestol(Goldwater Formulation, India)) Agnivardhana decreases the load on the pancreas & results in fast recovery from inflammatory changes [5,6]. Their application before Shodhana also makes the appropriate state of Dosha required elimination of vitiated Dosha. Moreover, such a kind of Dipana – Pachana & Jirna Jwarahara Chikitsa with Amruttotara Kashaya induces Pachana at digestive(Jatharagni) &Dhatu level, which is

hampered due to Agnimandya. & helps to alleviate inflammation, pain, and cramping by improving digestion [7]. Their antispasmodic effects also help suppress involuntary contraction of muscles and organs & protect cells against the effects of free radicals that damage cells in the pancreas. Both types of Chikitsa act as Immunostimulator, which help boost the immune system.

Shodhana procedures followed by appropriate Dipana-Pachana consists of Panchtikta Vasti

(500ml decoction of *Guduchi* + *Vasa* + *Nimba*, *Patola*, *Kantakari* added with *Dhanvantar Ghrita*, *Panchatikta Ghrita* (each 20ml) & Honey 10 gms + *Saindhava* five gms) & *Guduchyadi Niruha Vasti* (*Guduchi*, *Nimba*, *Dashmoola*, *Ashwagandha*, *Musta Kwatha* 800 ml) + *Dhanvantar Taila*- 40 ml++Honey ten gms + *Saindhava* five gms) each for 15 days. Both *Niruha Vasti* were administered in an alternate regime of two *Niruha Vasti* followed by one *Anuvasana Vasti* with *Dhanvantara Taila*.

Table 7. Treatment plan of shamana chikitsa for Initial 3 months (From 28/01/2017- 09/06/2017)

S.N.	Type of Internal medication	Dose	Anupana	Time of administration
1	<i>Arogyavardhini Vati</i>	250 mg 1 tab BD	Luke warm water	BD 1 hour Before food
2	<i>Amruttotar Kashayam</i> + <i>Dhanvantara Kashayam</i>	Each 10 ML	Equal quantity of Luke warm water	BD at 7.00 a.m. and 5.00 p.m. with an empty stomach
3	<i>Chandraprabha Vati</i>	250 mg 2 BD	Luke warm water	BD Before each Food
4	<i>Avipattikar Churna</i>	10 gm	Luke warm water	At the bedtime
5	<i>Triphala Guggulu</i>	250 mg 2 tabs	Luke warm water	BD After each food
6	<i>Panchatikta Ghrita</i> + <i>Dhanvantara Ghrita</i>	Each 5 gm BD	Luke warm water	BD After food

Table 8. Treatment plan of shamana chikitsa for further three months (From 10/06/2017 - 08/05/2018)

S.N.	Internal medication	Dose	Anupana	Time of administration
1	<i>Vasant Kusumakar Rasa</i> - 10tabs + <i>Guduchi</i> Satva- 20gm+ <i>Ashwagandha</i> <i>Churna</i> - 25gm	Total 25 doses 1 dose twice daily	Lukewarm milk	After Food (For 3 months only)
2	<i>Dhanvantara Kashayam</i>	10 ML	Equal quantity of Luke warm water	BD at 7.00 a.m. and 5.00 p.m. with an empty stomach
3	<i>Kumariasava</i> 10ml	10 ml	Equal quantity of Luke warm water	BD After food
4	<i>Panchatikta Ghrita</i> + <i>Dhanvantara Ghrita</i> AF	Each 5 gm BD	Luke warm water	After food
5	<i>Avipattikar Churna</i>	10 gm	Luke warm water	At the bedtime

Table 9. Therapeutic outcome

S.N.	Symptoms	Before Rx	After 6 months	After 1 years & 4 months
1	Recurrent episodes of pain in the epi-gastric region (especially after intake of the fatty or heavy meal)	Weekly once	No episode	No episode
2	Tenderness over epigastric region	2+	0	0
3	Loss of appetite	4+	1+	0
4	Intermittent Fever on and off	-	Absent	Absent
5	General malaise	4+	1+	0
6	Loss of weight	4+	1+	0
7	Constipation (intermittent)	4+	1+	0
8	Anxious & uncomfortable	4+	0	0
9	Mental irritation	4+	0	0

Both above-said *Vasti* formulations expel the toxins from the intestine & induce *Vatanulomana* & *Stroshodhana* effects. Both procedures also maintain the harmony of *Tridosha* & rectify the health of already injured tissue of the pancreas. The high antioxidant content in herbs like *Guduchi*, *Ashwagandha* used in these *Vasti* preparations assists the body to neutralize free radicals, which plays a crucial role in the pathogenesis of pancreatitis. This immunomodulatory action of both herbs is also supported by Prakash, Vaidya et al. [8]. *Vata-Pitta Shamaka* effect of *Guduchi* can be elaborated based on its properties such as *Tikta* and *Kashaya rasa but Madhura Vipaka*, *Ushna Virya* & *Guru* and *Snigdha* as per *Sharangdhara* & its actions, e.g., *Agnidipana*, *Kapha Rakta Prashamana*, immunomodulation, anti-bacterial and anti-inflammatory nature described by both Thatte UM, et al. & Jana U et al. [9,10]. It maintains the proper efficiency of the pancreas & potentiates the digestion of fats by improving bile production. In this way, it induces a good *pitta Shamaka* and *Pitta Saraka effect*(especially *Aamashayagatavridhha Pitta*) [11].

Mrudu Virechana with *Avipattikar Churna* balances *Pitta* without vitiation of *Vata* & eradicates *Dushit Pitta*. *Vasti Chikitsa* & *Mrudu Virechana* cumulatively regularizes *Apanavata*, helps in *Strotoshodhana*, eradicates *Dushiti of Tridosha* & improves the function of *Annavaaha* & *Purshivaha Srotas* [12].

Yakrutottejak effects induced by *Arogyavardhini Vati* & *Kumariasava* elevate the digestion of fat by increasing bile secretion. Both these formulations are *Dipana-Pachana* in nature & improve liver functioning by their hepatoprotective, rejuvenating, digestive, and anti-infective(antimicrobial) properties &

immunomodulatory and antioxidant actions [13,14]. *Arogyavardhini Vati* clears body channels for the nutrients by removing toxins & improving the digestive system due to *Kapha- Pitta Shamak* property. It is a beneficial drug for acute pathology of the pancreas [15].

Pramehaghna drugs(*Dhanvantara Kashayam*, *Chandraprabha Vati* & *Triphala Guggulu*) used in this case rejuvenates the pancreas & restores its functioning for its purpose of producing enzymes and insulin due to their pancreas-protective(*Pramehaghna*) actions carried out by their Anti-inflammatory, antimicrobial, antioxidant nature [16,17]. *Dhanvantara Kashayam* pacifies *Vata-Pitta*, which are the main culprit in the pathology [18].

Shamana & *Bruhana Snehapana* with specific medicated ghee (*Panchatikta Ghrita* + *Dhanvantara Ghrita*) nourishes *Rasa* & *Medo Dhatu*. The antioxidant effect of both types of ghee helps rejuvenate the damaged pancreatic tissues due to their *Pitta* & *Kapha Shamaka* property & *Stotoshodhak* effects [19].

Rasayana Chikitsa with herbal & herbo-mineral formulations (*Vasant Kusumakar Rasa*, *Guduchi Satva*- & *Ashwagandha Churna*- 25gm) adopted in this case checks over free radical formations which are responsible for inflammation in the pancreas. *Vasant Kusumakar Rasa* acts as a *Rasayana*, corrects *Jirna Jwara* & checks over pathogenesis due to its *Pramehaghna* action [20]. At the same time, *Guduchi Satva* induces multiple actions such as *Pittashamaka*, *Rasayana* & *Dhatvagnimandyahara* [21]. Herbal drugs, e.g., *Shatavari Churna* & *Ashwagandha Choorna*, are *Balya*, *Bruhana* & *Rasayan* in nature [22,23].

Different studies on pancreatitis were reported [24-27].

In a nutshell. Anti-inflammatory, antimicrobial, antioxidant effects of medications & therapeutic interventions used for this patient may check over free radical formations responsible for inflammation. Moreover, this protocol may elevate the digestion of fat by increasing the secretion of bile & reduces pain, swelling in the pancreas. Their cumulative actions may help to decrease cytokines, TNF- α (inflammatory markers), helps in PPR γ (anti-inflammatory action of cell), reduce inflammation up to a great extent, and expel the toxins from the intestine & rectifies the health of already injured tissue of pancreases & rejuvenates its health.

4. CONCLUSION

This single case study shows that Shodhana and Shamana Chikitsa, using the fundamentals of Ayurveda, effectively manages chronic pancreatitis due to Malnutrition in an adolescent child. This case study may provide a model for future *Ayurvedic* research in gastrointestinal disorders in pediatric practice. It may add one method of care that adds value or support conventional medicine. Further research study with large sample size is needed to embark on this conclusion.

CONSENT

As per international standard or university standard, patients' written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

As per international standard or university standard written ethical approval has been collected and preserved by the author(s).

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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