Journal of Ayurveda and Integrative Medicine 13 (2022) 100520

Contents lists available at ScienceDirect

Journal of Ayurveda and Integrative Medicine

journal homepage: http://elsevier.com/locate/jaim

Case Report

Ayurvedic management of amoebic liver abscess-a case report

Swarnima Mishra [a, *], Divya Kajaria [b]

[a] Ayurvedic Medical Officer, Uttar Pradesh, India
[b] Dept. of Kayachikitsa, AIIA, New Delhi, India

ARTICLE INFO

Article history:
Received 3 September 2020
Received in revised form
13 August 2021
Accepted 14 August 2021
Available online 14 February 2022

Keywords:
Liver abscess
Ayurveda
Yakrit Vidradhi

ABSTRACT

Liver abscesses are purulent collections in the liver parenchyma that result from bacterial, fungal, or parasitic infection. The Antibiotics, percutaneous drainage and surgery are the only therapeutic solution for this condition. A 30-year young gentleman a diagnosed case of multiple Amoebic liver abscesses visited at All India Institute of Ayurveda. He came with complaints of rectal bleeding, fever, pain in the abdomen along with blood and USG of abdomen showed multiple Liver Abscesses. In this case of liver abscess, after taking informed consent the patient was given an Ayurvedic treatment for 60 days without any Allopathic medicine or any invasive technique. There was a significant reduction noted in the symptoms of Abscess. At the end of treatment, USG examination revealed there was no focal defect or lesion in the liver and haematological parameters were found within the reference range. There were no clinically significant adverse reactions noted in the duration of treatment. The results of this study indicate the clinical efficacy of Ayurvedic treatment in the management of liver abscess and patient gave highly satisfactory response after his treatment. The treatment outcomes in the present case indicate that classical Ayurvedic measures may be helpful to the patients of a liver abscess.

1. Introduction

Amebiasis is still a major health problem in tropical countries including India. Despite a decrease in mortality due to amebiasis by 14.8% over a decade, the number of affected persons has increased to 500 million people worldwide [1]. The mortality due to amebiasis is mostly by extraintestinal infections, amebic liver abscess being the most common one [2]. Many of the complications of liver abscess can be reduced by early diagnosis with the help of ultrasound, which is the gold standard investigation for liver abscess [3]. The immuno-compromised host is more prone to develop an amoebic liver abscess. The size of the Abscess is an important factor in determining the response to medical treatment. Typical symptoms include abdominal pain and fever, where abdominal pain is reported to be present in 98% and fever in 74% of the cases [4]. Liver abscesses carry a mortality rate of 20–60% even with appropriate medical-surgical management [5]. The diagnosis of Liver Abscess is based on, Stool-ova, cyst, Blood-culture, sensitivity, USG-whole abdomen [6].

In modern medicine, the only treatment options for the liver abscess are antibiotics, percutaneous drainage and surgery. In Ayurveda, it can be correlated with *Yakrit Vidradhi*. *Acharya Charaka* and *Acharya Sushruta* mentioned the symptoms of *Vidradhi in Yakrit* but not documented the line of treatment. In this case study, the combination of Ayurvedic drugs is used to treat *Yakrit Vidradhi* according to their properties.

2. Case presentation

A 30-year-old man, visited OPD of Department of *Kayachikitsa* at All India Institute of Ayurveda (1/9/2018) with complaints of low-grade fever, occasional nausea, rectal bleeding in drops since last three days with associated symptoms of incomplete evacuation of bowel, and decreased appetite since last two to three months. The patient also reported history of pain in the abdomen which was usually located in the right hypochondrium and abdominal discomfort since last 3 days. There was no history of tuberculosis or similar episode in the past, no relevant family history was present and had no history of any external exposure, ingestion of raw food or milk, or known contacts to animals but as

* Corresponding author.
E-mail: swarnima.22bhu@gmail.com
Peer review under responsibility of Transdisciplinary University, Bangalore.

https://doi.org/10.1016/j.jaim.2021.08.013

Table 1
Strategic treatment protocol for management of liver abscess.

Sr.No.	Name of the medicine	Reference	Manufacturing pharmacy	Dosage (gm or ml)	Frequency and timing	Duration	Rationality for the selection of medicine
1.	*Mahātikatak Ghṛta* [12]	*Sushruta, Vidradhi Chikitsa Sthana* 16/28-33	*Kottakkal Ayurveda*	10 ml with Luke warm water	BD, Empty stomach	36 days	As mentioned in Sushruta, Vidradhi Chikitsa Adhyaya
2.	*Mahāsudarśan ghan Vaṭi*[13]	*Sharangadhar Samhita Madhyam Khand* ch:6/ 26-36	Baidyanath pharma	500 mg BD, Lukewarm water	BD, After breakfast	1st 6 days	It is a classical preparation mentioned in the *Sharangdhara Samhita*. It has been in use since long as an antipyretic in Ayurvedic practice.
3.	*Phalatrikādi kvātha cūrṇa* [14]	*Bhaishjya ratnawali Pandu rog.* 12/22	IMPCL	10 g m	BD, After breakfast	60 days	it is a classical preparation containing several ingredients, which has good hepatoprotective action.
4.	*Shigru Capsule* [8]	*Sushruta Samhita, Vidradhi Chikitsa Sthana16*/30-33	Himalaya drug company	250 mg BD Lukewarm water	BD, After breakfast	36 days	The drug name *Shigru* is mentioned in the *Sushruta Samhita Vidradhi Chikitsa Adhyaya*
5.	*Arśakuṭhāra Rasa* [15]	*Yogaratnakar, Arsha Chikitsa* 265.	IMPCL	250 mg, BD Lukewarm water	BD, After food	58 days	it is a classical preparation containing several ingredients, which has antimicrobial, anti-inflammatory property.
6.	*Kāsīsādi Taila* [16]	*Bhaishajya Ratnavali, Arsha Chikitsa, Rogadhikar*111-113	IMPCL	–	Local application on the anal region	58 days	it is a classical preparation containing drugs which have *Rakta stabhana* property.
7.	*Sitz bath (Awgaha Sweda)*	*Sushruta Samhita, Arsha Chikitsa, Rogadhikar* 6th Chapter	–	–	Daily Morning and evening	58 days	Mentioned in the *Sushruta Samhita* for reducing pain.
8.	*Ārogyavardhanī Vaṭi* [17]	*Siddhayoga Samgraha. Yakrit -Pleeha –Udar-Shotha Rogadhikar*	IMPCL	250 mg BD Lukewarm water	BD, After food	First and last 22 days	it is a classical preparation containing several ingredients. Its main ingredient (Picrorrhiza kurroa) is an effective therapeutic agent in liver disorders.

he was working as a driver, he used to eat outside food frequently. On examination he was conscious, febrile (Temperature- 100-degree F), pulse rate 114/min and blood pressure were 130/90 mmHg. There was significant icterus present in the bulbar conjunctiva, skin. As per abdominal examination patient had tenderness in right hypochondrium and epigastrium regions, umbilicus inverted. There were mild Hepatomegaly and Splenomegaly present. On per rectal examination, there were 2nd-degree internal haemorrhoids at 2, 5, &7 O'clock positions. Rest of systemic examination was within normal limits. Hematological investigation revealed hemoglobin 14.9 g m/dl, total leukocytes count (TLC) 15,800/cumm (polymorphs 77%, lymphocytes 16%, eosinophil 4%, monocytes 3%, basophils 0%), however liver enzymes SGOT/SGPT-35/40, total Bilirubin of 1.6 mg/dl (Direct- 1.1 and Indirect- 0.5), Albumin- 4 g/dl, Alkaline phosphatase was elevated to 125 IU. Stool for Ova and Cyst showed Ova nil and *Entamoeba histolytica* Cyst present. U.S.G abdomen showed liver is enlarged in size- 18 cm with grade II fatty infiltration with the well-defined hypoechoic lesion in the second segment of liver measuring 115 cc and in segment VII measuring 26.22 cc seen with enlarged spleen measuring 13.9 cm with a diagnosis of right lobe Liver Abscess (Fig. 1). Renal function and serum electrolytes were within references range.

A treatment protocol was prepared for the sequential management of the disease. As the patient Suffered from *Arsha (Raktarsha)* and *Udara Roga* simultaneously. As it was considered as *Nidanarthakar Roga (Arshebhyo Jatharam.)* and the treatment planned accordingly [7].

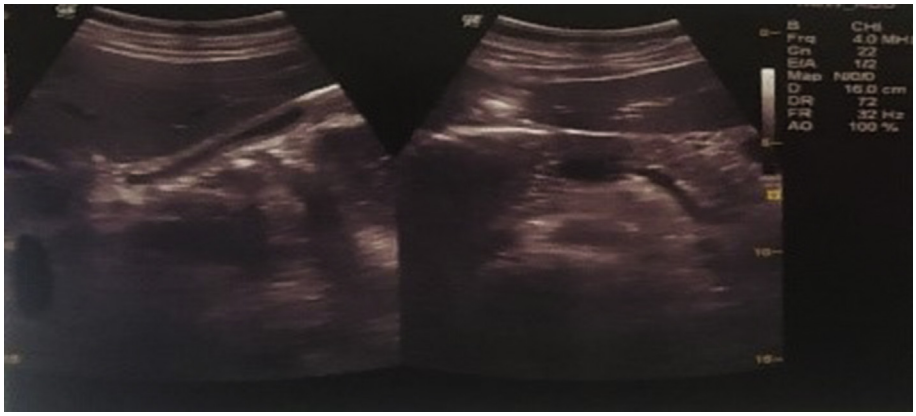

Fig. 1. USG Abdomen Showed liver enlarged in size- 18 cm with grade II fatty infiltration with the well-defined hypoechoic lesion in Liver in Segment II measuring 115 cc and in segment VII measuring 26.22 cc seen with enlarged spleen measures 13.9 cm with a diagnosis of Right lobe Liver Abscess.

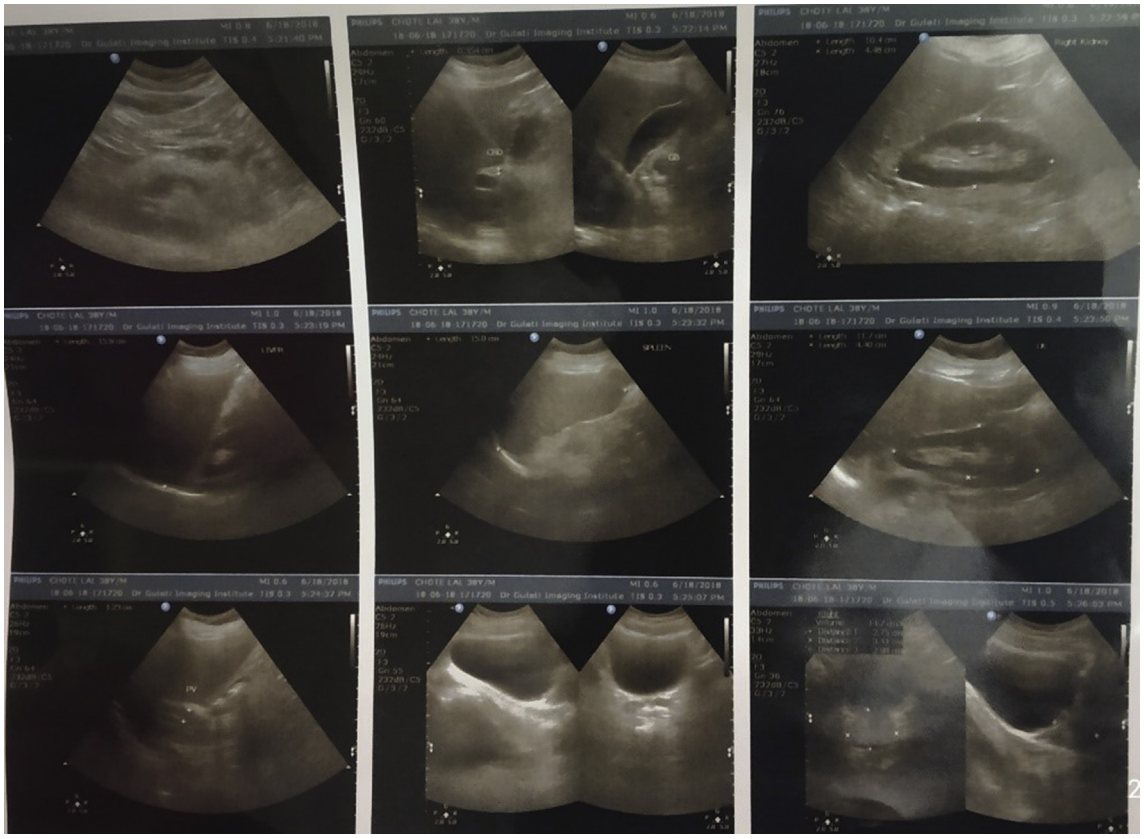

Fig. 2. U.S.G. abdomen repeated after 35 days showed liver is enlarged in size- 15.8 cm with grade II fatty infiltration and no any focal defect or lesion was seen in the liver with splenomegaly of size 15 cm.

3. Management

As the patient was suffering from low grade fever, the first step of treatment protocol was to manage the fever along with Abscess. Based on presenting symptoms, Liver abscess can be correlated with *Yakrit Vidradhi* in Ayurveda. Thus, treatment for *Yakrit Vidradhi* along with *Arsha* as described by *Acharyas* was started [8–10]. There is no direct correlation of amoebic liver abscess in Ayurveda. It can be defined as *Yakrit vikar* or *Yakrit Vidradhi*. According to Ayurveda concept, *Yakrita* is moola of *Raktavaha Srotas*. *Rakta* and *Pitta* have *Ashraya Ashrayee* (substratum and subsistence) relationship so mostly *Yakrit Vikaras* (liver diseases) occur due to vitiation of *Pitta*, so most of the drugs mentioned for *Yakrit Vikara* (Liver diseases) or *Kamala* are *Kapha- Pittashamaka* either due to *Tikta* (bitterness), *Kashaya* (astringent) *Rasas* or *Madhura Vipaka* or *Sheeta Veerya* [11]. The medicines used in the treatment protocol adopted along with the approximate time are enlisted in the Table 2. Below table given for the various medicine preparation used in the treatment protocol (Table 1).

Patient was advised to consume *Kulthi Yusha* (Horse gram) with some controlled diet and controlled physical activities. Controlled diet implies restriction of the high-fat diet, spices and contaminated food (street food & water) and controlled physical activity means limited physical exertion related to his profession. He was advised not to drive more than 30 km in one run and take proper rest (>30 min) between two successive drives. On 7th day of treatment, his vitals were 124/80 mmHg, 90/min and 98 °F i.e. blood pressure, pulse rate and temperature respectively. After 35th day of the treatment-Laboratory investigation were carried out that reported following changes TLC – 5.9000/Cumm (polymorphs 63%, lymphocytes 10%, total bilirubin –0.47 mg/dl, direct bilirubin – 0.28 mg/dl, indirect bilirubin –0.19 mg/dl, SGOT-33 IU/l, SGPT-41 IU/l, Alkaline phosphatase –97.4 IU/l and stool ova cyst investigation confirms the presence of cyst in the stool. U.S.G abdomen reveal enlarged liver 15.8 cm in size with grade 2 fatty infiltration and no focal defect or lesion. Also, splenomegaly of size 15 cm was noted (Fig. 2).

After the treatment of 35 days, the patient's condition was improved and he felt healthy. Clinically there was no icterus, pain in the abdomen and fever. But occasionally patient passed hard stools and felt pain in the anal region during defecation. Subsequently 36 days of treatment, all previous medications were discontinued except *Phalatrikādi kvātha cūrṇa* 10 g m BD before food, *Ārogyavardhanī Vaṭi* 250 mg BD after food along with *Arśakuṭhāra Rasa* 250 mg BD after food and *Kāsīsādi Taila* for local application on the anal region. Sitz bath continued. On 58th day, repeated investigations revealed normal CBC, LFT, and stool -ova cyst. After that patient was asked to continue *Phalatrikādi kvātha cūrṇa* for management of fatty liver as well as hepatomegaly and patient was followed up regularly. After 60 days, the patient did not experience any symptoms, hence the medication were discontinued but advised to follow the dietary restrictions. Now the patient is symptom free and in good health.

This strategic treatment was adopted for the management of Liver Abscess stated below (Table 2). The duration of the treatment can be varied due to the size and number of the abscesses.

Table 2
Treatment protocols along with their approximate time.

1ST LINE (3 weeks)	2ND LINE (6 weeks)	3rdLINE(9 weeks)
• *Mahāsudaran ghan Vaṭi* 500 mg BD after breakfast. (till fever subsides) • *Ārogyavardhanī Vaṭi* 250 mg BD after food. • Castor oil 10 ml HS with Luke warm water orally.	• *Mahātikatak Ghṛta* 10 ml BD with Luke warm water empty stomach. • *Shigru* Cap. 250 mg BD with • *Varunādi kvātha cūrṇa* [17] (IMPCL)10 g m or Phalatrikādi *kvātha cūrṇa* and *Kulthi* (Horse gram) *Yusha* BD after food alongwith restricted diet *(Shajan* (*Moringa oleifera*), rice with *Kulthi* beans) and some rest.	• *Phalatrikādi kvātha* cūrṇa10 g m BD/ SOS before food • *Shigru* cap- 250 mg BD. • *Ārogyavardhanī Vaṭi* 250 *BD after* food.

4. Discussion

There were many studies conducted on the liver abscess. One of the studies on liver abscess management reported that, once recognized, percutaneous drainage and antibiotic treatment are the mainstay of management for PLA [18]. One of the other studies states percutaneous catheter drainage is a better modality compared to percutaneous needle aspiration especially for larger abscesses that are partially liquefied or with thick pus [19].

But the treatment protocol in the present study was prescribed according to their reference in the Aayurveda classics and based on the mode of action of drugs. *Mahasudarshan ghan vati* consist of *Chirayata* and *Kutaj* as the main ingredient of the classical formulation. The pharmacological data provide the evidence that for the sustenance of folklore claim of *Swertia chirata* as an antipyretic agent. *Swertiamarin* found in aqueous extract of *S. chirata*, is probably responsible for the antipyretic activity [20]. *Swertiamarin* has also been tested for its anti-hepatitis properties [21]. Mangiferin is testified to have anti-viral, antioxidant and anti-inflammatory activities [22]. *Swerchirin* is well-known for its anti-malarial, hepatoprotective, pro-hematopoietic and blood glucose-lowering activities [23]. The intervention of *PhaltrikadiKwath* is decided based on the main ingredient which is *Kutki* (P.kurrora). *P. kurroa* retrogressed several features like lipid content of the liver tissue, morphological regression of fatty infiltration, hypolipidemic activity, and reduction of cholestatis [24]. *Katuki* possesses hepatoprotective anti-viral and anti-oxidants activities [25]. Moringa O. root *(Shigru*) is best effective in acute inflammation and is also useful in chronic inflammatory conditions. It has the ability to inhibit cellular accumulation and fluid exudation [26]. *Ārogyavardhanī Vaṭi,* helps in the preservation of the physiology and structure of *yakrit* (liver) as it is said to possess *Rasayana* (rejuvenating) properties. It is effective in acute viral hepatitis, possesses significant effects on recovery of the liver function and hepatoprotective effect against CCl_4-induced liver injury [27]. *Arśakuṭhāra Rasa* containing *Rasa, Gandhka, Abhraka, Tankana* etc. *Abhrak bhasma* (mica-based) is reported to possess hepatoprotective, anabolic, immunomodulatory effects [28]. *Acharya Sushruta* advocated the use of *Kasisadi Taila* in *Dushta Vrana*, external application of *Kasisadi Taila* helps in cleaning the wound and helps in easy healing. *Kasisadi Taila* prepared with *Kasisa* as the main ingredient in wound healing for its efficacy has been indicated in *Sushruta Samhita*, (*Sutrasthana* 37th chapter, 16th verse) [29].

5. Conclusions

In the present case, the impact of the treatment given to the patient of Liver Abscess indicated a decent outcome. The entire Ayurvedic treatment methodology selected for this situation indicated *Kapha-Pitta shamaka*, Anti-inflammatory, Antioxidant, and liver rehabilitation properties. Where no invasive strategy was utilized and very little time was required for the improvement in subjective as well as objective standards. However, the specific method of activity of medications can't be asserted, only based on a couple of case studies, yet in light of progress in abstract and target boundaries seen for the present case, the above method of activity can be hypothesized. For additional exploration, the research can be carried out with a large sample size.

6. Investigations

- Abdominal ultrasound to locate an abscess
- Blood tests for signs of infectious inflammation, such as an increased serum white blood count and neutrophil levels (CBC, LFT, KFT ETC)
- Stool ova cyst test.

Source of funding

None.

Author contributions

Dr. Swarnima Mishra: Conceptualization, Methodology, Writing- Original draft preparation. **Dr. Divya Kajaria:** Supervision, Writing- Reviewing and Editing, Conceptualization.

Acknowledgements

We would like to acknowledge Dr. Utkarsh Soni for their immense and technical support for helping me out in completing this article.

References

[1] Wang H, Naghavi M, Allen C, Barber RM, Bhutta ZA, Carter A, et al. Global, regional, and national life expectancy, all-cause mortality, and cause-specific mortality for 249 causes of death, 1980–2015: a systematic analysis for the Global Burden of Disease Study 2015. Lancet 2016;388(10053):1459–544. https://doi.org/10.1016/S0140-6736(16)31012-1 [PMC free article] [PubMed] [CrossRef] [Google Scholar].
[2] Singh Aradhana, Banerjee Tuhina, Shukla Sunit Kumar. Prevalence of cases of amebic liver abscess in a tertiary care centre in India: a study on risk factors, associated microflora and strain variation of. Entamoeba histolytica 2019;14(4):e0214880 [PubMed].
[3] Pranab Kumar Ghosh, Nilay Mandal, Jagonmay Majhi, Mintu Mohan Nandi, Shib Shankar Kuiri, Gautam Ghosh, et al. Pyogenic liver abscess: prospective evaluation of USG guided percutaneous therapeutic aspiration. IOSR J Dent Med Sci 2014;13(9):9–15.
[4] Chang HR, Lee JJ, Lin CB. Pleural empyema secondary to rupture of the amoebic liver abscess. Intern Med 2012;51:471–4 [PubMed].
[5] Nandhkishore Narwade, Abhijit Bagul, Naseem Khan, Sridevi Murali, Rahul Borude, Aniket Ray, et al. What is the recent trend in the clinical study of liver abscess cases. Int Surg J 2018;5(4). https://doi.org/10.18203/2349-2902.isj20181115.
[6] Swaminathan Vikram, O'Rourke Joanne, Gupta Rashmi, Kiire CF. An unusual presentation of an amoebic liver abscess: the story of an unwanted souvenir. BMJ Case Rep 2013;2013:bcr2012006964 [MEDLINE (Index Medicus), PubMed Central, Scopus, Embase (Excerpta Medica), Google Scholar].
[7] Shree Satyanarayan Shastri. Chraka Samhita vidyotani Hindi commentary. Nidana sthana 8/16-18, Vol-I. Varanasi: Chaukhamba Samskrita Samsthana; 2016. p. 666.

[8] Ambika dattashastri. Sushruta Samhita Ayurveda Tattva sandipika Hindi commentary. Chikitsasthana 16/28-31. 2nd ed., vol. 1,2. Varanasi: Chaukhamba Samskrita Samsthana; 1997.
[9] Brahmanand Tripathi. Astanga Hridya Nirmala Hindi Commentary. Chikitsasthana 13/8- 12 reprint. Varanasi: Chaukhamba Samskrita Samsthana; 2015. p. 723.
[10] Shree Satyanaraan Shastri. Chraka Samhita vidyotani Hindi commentary, chikitsa sthana 14, vol. 2. Varanasi: Chaukhamba Samskrita Samsthana; 2016.
[11] Yadavaji Trikamaji Acharya. Sushruta Samhita of Sushruta with nibandhasangraha commentary of Sri Dalhanacharya. Sharira Sthana 9/19. Varanasi (U.P.): Chaukhamba Surbharti Prakashan; 2008. p. 383. Reprint.
[12] Dr Ambika dattashastri. Sushruta Samhita Ayurveda tattva sandipika Hindi commentary, chikitsasthana 16/28-33. 2nd ed. Varanasi: Chaukhamba Samskrita Samsthana; 1997.
[13] Mahasudarshan choorna. Sharangadhar Samhita. Madhyam Khand. ch:6/26-36. chaukhambha orientalia. Varanasi 1995.
[14] Bhaisjya ratnawali- Hindi teeka, commented by Sri Kaviraj Ambikadutt Shastri. 20th ed. Varanasi: Chaukhambha Prakashan; 2010. p. 377. chapter Pandu rog 12/22,.
[15] Sureshbabu Madhan Shetty, Yogarathnakar, Chikitsa Arsha. Published by. II ed. Varanasi: Chaukamnbha Sanskrit Series Office; 2011. p. 265.
[16] Dasji G, Ratnavali Bhaishajya. Arsha chikitsa, rogadhikar. 1st ed. Varanasi: Chaukhambha Sanskrit Bhavan; 2006. p. 111–3.
[17] Acharya YT. Siddhayoga Samgraha. Yakrit -Pleeha –Udar-Shotha rogadhikar. Ch. 10. 11th ed. Nagpur: Shree Baidhyanath Ayurveda Bhavana; 2000. p. 65–6.
[18] Serraino C, Elia C, Bracco C, Rinaldi G, Pomero F, Silvestri A, et al. Characteristics and management of pyogenic liver abscess: a European experience. Med (Baltimore) 2018 May;97(19):e0628. https://doi.org/10.1097/MD.0000000000010628. PMID: 29742700; PMCID: PMC5959441.[PubMed].
[19] Singh S, Chaudhary P, Saxena N, Khandelwal S, Poddar DD, Biswal UC. Treatment of liver abscess: prospective randomized comparison of catheter drainage and needle aspiration. Ann Gastroenterol 2013;26(4):332–9 [PubMed].
[20] Bhargava S, Rao PS, Bhargava P, Shukla S. Antipyretic potential of Swertia chirata buch ham. Root Extr Sci Pharm 2009;77:617–24 [PubMed].
[21] Wang CZ, Maier UH, Eisenreich W, Adam P, Obersteiner I. Unexpected biosynthetic precursors of amarogentin a retrobiosynthetic 13C NMR study. Eur J Org Chem 2001;2001:1459–65. https://doi.org/10.1002/1099-0690(200104)2001:8<1459:AID [PubMed].
[22] Kumar IV, Paul BN, Asthana R, Saxena A, Mehrotra S, Rajan G. Swertia chirayita mediated modulation of interleukin-1 beta, interleukin-6, interleukin-10, interferon-gamma, and tumor necrosis factor-alphain arthritic mice. Immunopharmacol Immunotoxicol 2003;25:573–83. https://doi.org/10.1081/IPH-120026442 [PubMed].
[23] Ya BQ, Nian LC, Li C. Protective effect of swerchirin on hematopoiesis in 60Co-irradiated mice. Phytomedicine 1999 May;6(2):85–8 [PubMed].
[24] Shetty SN, Mengi S, Vaidya R, Vaidya AD. A study of standardized extracts of Picrorhiza kurroa Royle ex Benth in experimental nonalcoholic fatty liver disease. J Ayurveda Integr Med 2010;1(3):203–10. https://doi.org/10.4103/0975-9476.72622 [PubMed].
[25] hukla B, Visen PK, Patnaik GK, Dhawan BN. Choleretic effect of Picroliv, the hepatoprotective principal of Picrorhiza kurroa. Planta Med 1991;57(1):29–33 [PubMed].
[26] Mahajan Shailaja G, Mehta Anita A. Anti-Arthritic activity of hydroalcoholic extract of flowers of moringa oleifera lam. In wistar rats. J Herbs, Spices, Med Plants 2009;15(2):149–63 [PubMed].
[27] Sapkota YR, Bedarkar P, Nariya MB, Prajapati PK. Hepatoprotective evaluation of Arogyavardhini Rasa against paracetamol-induced liver damage in rats. BLDE Univ J Health Sci 2017;2:44–9 [UGC Care].
[28] Savrikarand SS, Ravishankar B. Introduction to 'Rasashaastra' the iatrochemistry of ayurveda. Afr J Tradit, Complementary Altern Med 2011;8(5 Suppl):66–82 [PubMed].
[29] B N. Mashetti effect of Kasisadi Taila in Dushta Vruna. J Ayurveda Integrated Med Sci May-June, 2017;2(3):43–6 [PubMed].