



A STUDY ON LEECH'S THERAPEUTIC APPLICATIONS

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Abstract- the research paper showcases an elaborate study of Leech therapy, which is also known as Hirudotherapy. Leech therapy is mainly a type of alternative therapy that includes fascinating creatures like leeches for a wide range of diseases and therapeutic purposes. This paper will also discuss that this therapy has been used for centuries starting from the period of Ancient Egyptian, in different cultures and becoming increasingly popular in recent times.

Keywords- Bloodletting, blood circulation, venous congestion, reconstructive surgery, wound healing, anti-inflammatory effects

I. INTRODUCTION

Starting from the Ancient period, Egyptian, Indian, Greek and also Arab physicians have used leeches as a treatment process for some specific diseases starting from bleeding to systemic ailments, like skin diseases, abnormalities in nervous system, urinary problems and reproductive system related diseases, inflammation, and dental diseases [1]. Along with this, these creatures have made a great comeback as a new treatment process for many chronic diseases as well as life threatening diseases, including cancer, infectious diseases, cardiovascular problems, and metastasis. In recent years, this therapy has also made its place in plastic and microsurgery as a most protective and valuable tool [2].

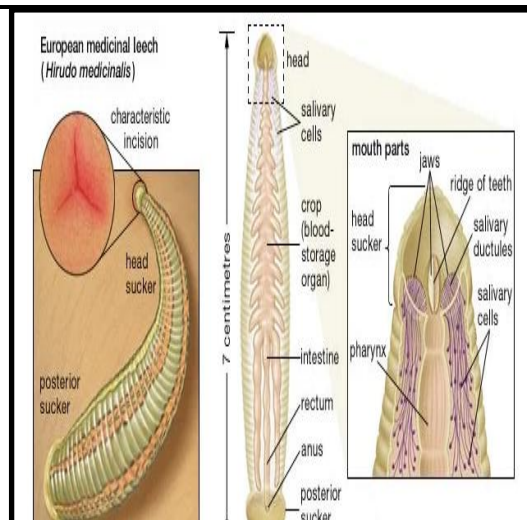


Figure 1: Uses of leeches in medical purposes

(Source: 2)

In this 20th century, many clinics and healthcare professionals all over the world in cosmetic and plastic surgery have already started to use this therapy with leeches. The above figure shows the uses of leeches in the medial purposes. Therefore, it can be deduced that, despite the effective properties of this therapy, the safety, as well as difficulties of leech healing are still controversial.

II.OBJECTIVES

In order to describe the topic following objectives were created:

- To analyze the different key factors related to the leech therapy
- To understand different medical applications for leech therapy
- To discuss the issues faced in leech therapeutic applications
- To describe the advantages and disadvantages of leech therapy

III.METHODOLOGY

Leeches are fascinating creatures that have been used in specific diseases or medical purposes from the Ancient period. In this current paper researcher has conducted a secondary data analysis and thematic analysis to analyze the effectiveness of leech therapy [3].

IV. LEECH THERAPEUTIC APPLICATION

It has been observed that its therapeutic applications include bloodletting, promoting blood circulation, pain relief, and venous congestion. One of the most significant uses of leeches for therapeutic purposes is bloodletting [4]. In this process, leeches are used to remove excess blood from a patient's body. It has been noted that, while this disease is no longer a normal practice in the modern treatment

This above figure shows a quantitative analysis of hemodynamic of congested island flaps under leech therapy. Leech saliva has analgesic properties like hyaluronidase which helps to disintegrate scar tissue

process, leech therapy is still helping these types of cases where blood flow needs to be reduced.

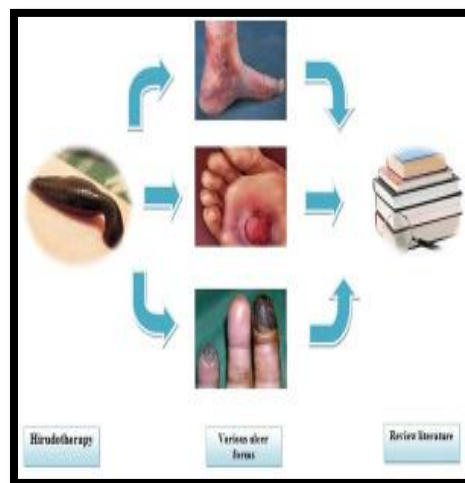


Figure 2: Uses of leeches in chronic venous insufficiency

(Source: 5)

Moreover, the above figure shows leech saliva has different types of components that are used for increasing flow of the blood. Besides this, leeches are also used for increasing blood circulation in those areas where blood flow is low and restricted due to any dangerous injury or surgery [5]. Also, this therapy can be used for treating chronic venous insufficiency or venous congestion. It is a condition where blood gathers in a particular area due to blocked veins. However, leeches can decrease swelling as well as help in healing by attaching to the affected body part and sucking out the blood from that area.

and reduce pain [6]. Also, this therapy is used to treat a wider range of painful diseases, such as arthritis, migraine or headaches, and high back pain.

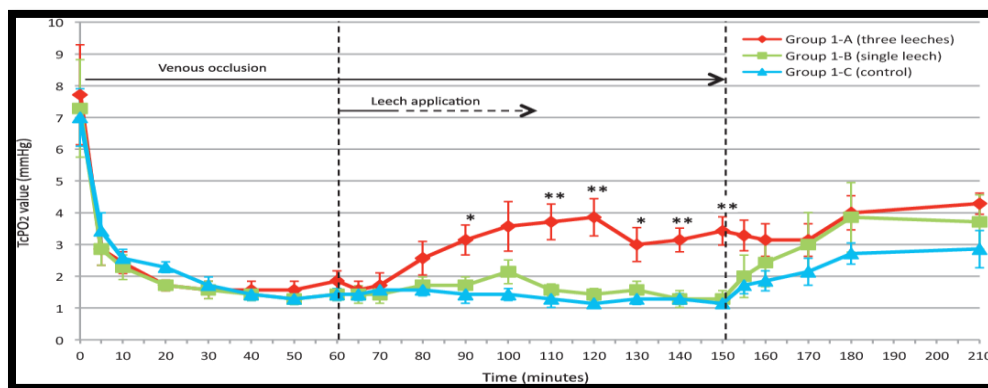


Figure 3: Quantitative analysis of leech therapy (Source: 6)

V. RECONSTRUCTIVE SURGERY

Leech therapy can be used in reconstructive surgery to repair parts of the human body by increasing blood flow and lowering the risk of blood clots [7]. Along with this, these therapy leeches can also be used in the reattachment of severed fingers and toes.

| | Leech Therapy (n=25) | Exercise (n=19) |
|------------------|----------------------|-----------------|
| Age | 60±7 | 56±7 |
| Height | 150±9 | 160±8 |
| BMI | 28±5 | 25±5 |
| Duration of pain | 13±14 | 11±9 |

Table 1: Pre protocol analysis for Leech therapy

The above table indicates pre protocols of this therapy and suggests that generally 1–10 leeches are used for every treatment [8]. At the first session, the patient might require two or more sessions per day.

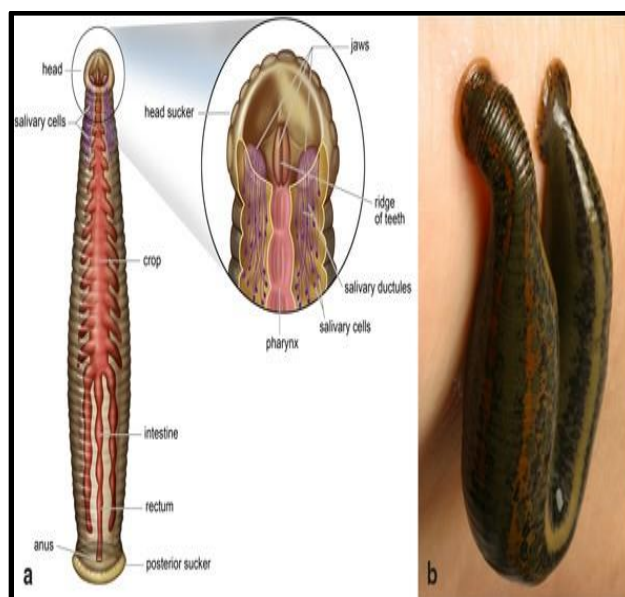


Figure 4: Uses of leeches in reconstructive surgery (Source: 10)

VI. WOUND HEALING

Leech therapy helps to promote wound healing where leeches are used to treat a wider range of wounds, such as pressure sores and diabetic ulcers. It has been noted that these creatures have anticoagulants, vasodilators, and hirudin in their saliva that helps to increase blood flow and decrease inflammation, and alleviate pain [9]. Moreover, these substances are also beneficial while promoting wound healing by enhancing blood flow to the lower blood flow areas, reducing extra fluid and accumulated blood, as well as stimulating tissue regeneration.

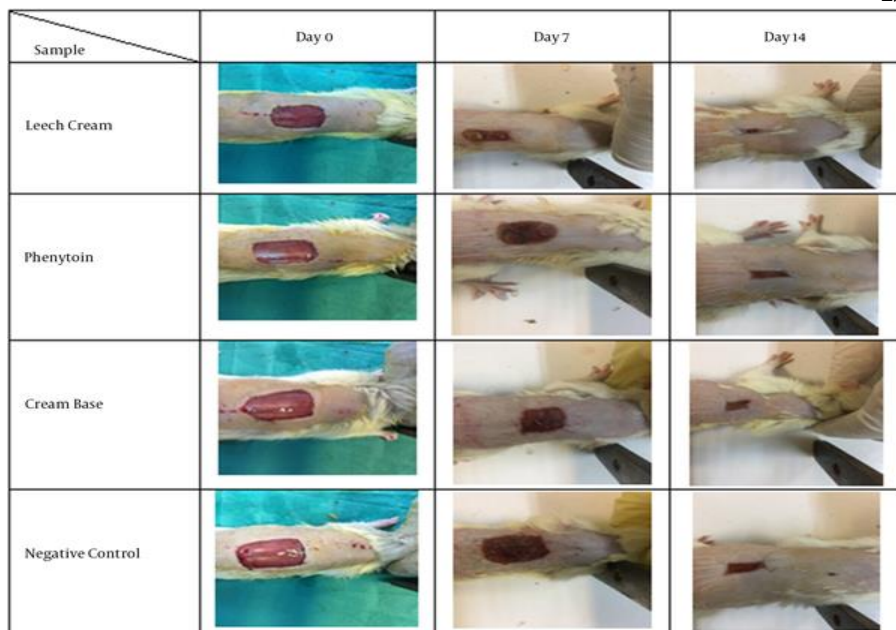


Figure 5: Explanations of amputation wound on treatment days
(Source: 1)

VII. ANTI-INFLAMMATORY EFFECTS

Moreover, their saliva has huge anti-inflammatory properties such as leukotrienes, histamine and prostaglandins which help to treat a variety of diseases [10]. Leech therapy is also used in inflammatory conditions, as it helps to remove excess body pain such as rheumatoid arthritis as well as chronic eczema.

X. PROBLEM STATEMENT

| Advantages of leech therapeutic application | Disadvantages of leech therapeutic application |
|--|--|
| Leeches promote blood flow and help to dissolve blood clots. | Some patients may face an allergic reaction. |
| Leeches can help to reduce chronic pain, reduce swelling and inflammation. | Leech therapy can be expensive. |

Table 2: Advantages and disadvantages of leech therapeutic application

The above table shows the benefits there is a high risk of infection when these fascinating creatures are not properly sterilized before any therapeutic application. Some people may also face

some allergic infections which can lead to itching, redness, as well as swelling at the site of the bite. Along with this, it is crucial to identify the potential risk before its application and also seek the guidance of a qualified healthcare professional who is highly experienced in this therapy.

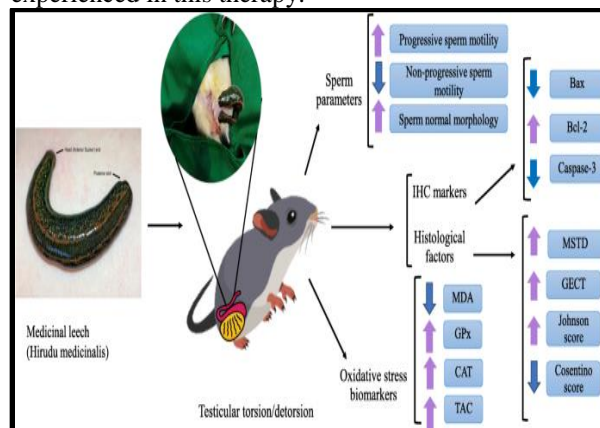


Figure 6: Application of leech therapy
(Source: 9)

CONCLUSION

From the overall study it can be concluded that leeches have various types of therapeutic application such as leeches have been used as the components of medicine for treating nervous system abnormalities, different types of dental pains and problems, skin problems, and infections. Along with

this, this paper highlights that ongoing research needs to continue for exploring more and new uses for these thrilling and fascinating creatures.

Therefore, it can be identified that this kind of therapy is not suitable for every patient, and it can be used as a valuable way for some specific diseases and in certain conditions.

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