ABSTRACT

Background: anal fissure is a painful longitudinal ulcer of the anoderm (ectoderm), the distal part of anal canal. Due to increased postoperative complications, in recent years, many some attempts to treat this disease conservatively. Treatment includes tissue autologous growth factors that are present in the platelet rich plasma. These growth factors can induce tissue regeneration, revascularization and fibroblast proliferation. Aim: this study aimed to evaluate the effectiveness of PRP in the treatment of the anal fissure. Patients and Methods: prospective randomized study was conducted on Patients with anal fissure. Identification, curettage and local injection of APRP at the floor of fissure. Results: from January 2014 to January 2015 we have involved 23 patients, 12 men and 11 women, with an average age of 49 years and a minimum follow-up of 6 months. Two dropped out. 17 patients had complete healing of fissure. 4 show no improvement. Conclusions: there is a clear benefit to the use of APRP as a treatment for anal fissure.

Key words: anal fissure, complications, APRP, healing.

INTRODUCTION

Anal fissure (AF) is a painful longitudinal ulcer or tear in the anoderm of anal canal. Anal fissure has been recognized as the main cause of severe anal pain over the world [11].

Fissure may be typed as acute or chronic and primary or secondary. In 6–8 weeks, an acute AF, which looks like a tear in the anoderm, can become chronic. A chronic AF is diagnosed by indurated edges caused by repeated irritation. Chronic anal fissures are wider and deeper than acute fissures. Sentinel tags (pile) and hypertrophied papilla may complete the picture of a chronic AF [11-14].

Aetiology and pathophysiology of anal fissure are not clearly understood; however, increase in the resting pressure of internal anal sphincter (IAS) and local hypoperfusion and ischemia of anal canal mucosa are widely accepted etiologies among clinicians. Up to now, several successful medical and surgical treatments have been described based on these aetiologies [12].

Treatments that are based on the pathophysiology of anal fissure have commonly focused on decreasing IAS pressure and consequently increasing local perfusion and decreasing the ischemic conditions in anal canal (specifically posterior anal commissure). Undoubtedly, several kinds of treatments, especially medical treatment and surgical sphincterotomy have been successful in reducing IAS pressure; however, these efforts are insufficient to heal the anal fissures entirely [1-5].

On the other hand, growth factors play an important role in promoting and improving the wound healing cascade. For this cause, platelet was selected as a safe and cost minimizing source for treatment. Platelet-rich plasma (abbreviation: PRP) is blood plasma that has been enriched with platelets. As a concentrated source of autologous platelets, PRP contains several different growth factors and other cytokines that can stimulate healing of soft tissue [12-18].

PRP is an evolving therapy and used widely in many specialties like dermatology and others. Platelet rich plasma therapy utilizes growth factors present in alpha granules of platelets in an autologous manner [15].

PRP was first developed in the 1970s and first used in Italy in 1987 in an open heart surgery procedure. PRP therapy began gaining popularity in the mid 1990s. It has since been applied to many different medical fields such as cosmetic surgery, dentistry, sports medicine and pain management [1-6].

PATIENTS AND METHODS

From January 2014 to January 2015 at Zagazig university hospitals, Prospective randomized study was conducted on 23 Patients with anal fissure.

Inclusion criteria:
1- Patients above 18 years and below 60 years.
2- Acute or chronic anal fissure.
3- Patients fit for surgery with all organs functions within acceptable ranges.
4- All patients who are mentally oriented and consented for joining this research study.
Technique
Preparation of PRP

PRP preparation method approved by the U.S. Food and Drug Administration. It involves the collection of the patient's whole blood (that is anticoagulated with citrate dextrose) before undergoing two stages of centrifugation designed to separate the PRP aliquot from platelet-poor plasma and red blood cells.

Procedure

Under sedating analgesia the patient was in dorsal lithotomy position. We started the procedure by curettage of the floor of fissure. We inject the prp in the floor and edges as shown in photo. Follow up was done for 6 months.

Table (1): results.

<table>
<thead>
<tr>
<th>Total number</th>
<th>23</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Sex</td>
<td>12 males and 11 females</td>
</tr>
<tr>
<td>-Median age</td>
<td>49 years old</td>
</tr>
<tr>
<td>-Healed</td>
<td>17</td>
</tr>
<tr>
<td>-Dropped</td>
<td>2</td>
</tr>
<tr>
<td>-No change</td>
<td>4</td>
</tr>
</tbody>
</table>

**RESULTS**

From January 2014 to January 2015, we have involved 23 patients, 12 men and 11 women, with an average age of 49 years and a minimum follow-up of 6 months. Two dropped out. 17 patients had complete healing of fissure. 4 show no improvement.

Assessment of intensity of postoperative pain was evaluated according to the visual analogue scale (VAS); this scoring system is graded from 0 to 10, where 0 = none or no pain, VAS 1–3 = mild pain, VAS 4–6 = moderate pain, and VAS 7–10 = severe pain. Declofenac 75 mg ampoule was the standard analgesic for all patients on the postoperative day. The postoperative need for analgesia was lower (p < 0.01).

No complications were noted on follow-up at 1 week except a transient mild anal serous discharge in one patient. A second follow-up at 6 weeks showed good healing with an inconspicuous scar for all patients.

**DISCUSSION**

Anal fissure is a longitudinal tear in the lining of the distal anal canal that commonly affects young adults. Manual dilatation of the anus was the first surgical procedure described that was effective in treating this common condition. However, this technique is associated with high recurrence rates and disturbances in continence in up to 40% of cases and is, therefore, no longer recommended [10-17].

It has been generally thought that hypertonicity of the internal anal sphincter (IAS) was involved in the pathogenesis of anal fissure. This theory has been substantiated by a highly successful surgical treatment for anal fissure and internal sphincterotomy which generally results in a reduction of resting anal pressure [16].

The primary treatment of anal fissures has changed over the past 5 years by the introduction of new pharmacological agents such as nitrates, calcium antagonists and botulinum toxin. These agents have reduced the need for surgical intervention by causing a chemical sphincterotomy, which results in effective lowering of internal anal sphincter tone. This is thought to improve anal mucosal blood flow and can heal up to 70% of anal fissures. Moreover, chemical sphincterotomy
avoids the incontinence that can occur after surgery. Nevertheless, surgery still has a role to play in the treatment of chronic anal fissures that have failed medical treatment [3-9].

Autologous PRP is a relatively new biotechnology that has shown promise in the stimulation and acceleration of soft-tissue and bone healing. The efficacy of this treatment lies in the local delivery of a wide range of growth factors and proteins, mimicking and supporting physiologic wound healing and reparative tissue processes. Consequently, the application of PRP has been extended to many different fields, including orthopedics, sports injuries, dental and periodontal surgery, and cosmetic, plastic, cardiovascular, general and maxillofacial surgery [19-21].

Medical therapies applied to anal fissure prior to the use of GTN, Botox and CCBs were generally thought of as short term palliation for fissure symptoms, inefficient in obtaining a long term cure, and were replaced by surgery for the long term management of anal fissure, except for acute fissure and fissure in children. By the late 1990s, when alternatives to surgery were sought because of cost, time for recovery and risk of incontinence, rather than turn back to these older therapies, newer medications were therefore sought, in each case a medication that is known to promotes fissure healing [22].

APRP injection is suitable for treatment of chronic idiopathic anal fissure and not associated or complicated by other anal diseases which require surgical treatment such as fistula in ano or hemorrhoids. PRP injection is a simple procedure, easy to learn, and can be done in the outpatient clinic without the need for sedation or local anesthesia [3].

It is cost effective and leads to healing of the fissure avoiding surgery with its potential risk of incontinence. The site of injection in the floor of fissure, the gender and the age of the patient do not appear to affect the outcome of the treatment.

In summary we have shown that PRP injection is a suitable first-line treatment of choice for chronic idiopathic anal fissure, which is not associated with other anal conditions.

CONCLUSION

We found a promising effect of PRP to promote healing of anal fissure. The results of further studies concerning the described PRP may have much wider implications more than just therapy for anal fissure.

REFERENCES


13- Knighton DR, Hunt TK, Thakral KK, Goodson WH. Role of platelets and fi brin


