CASE REPORT

Management of Ulcer Post Deciduous Teeth Self-extraction in Children With Aplastic Anemia

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ABSTRACT

Aplastic Anemia (AA) is a blood disorder, cause a greater risk of prolonged bleeding and poor wound healing. This case reported the management of ulcer after tooth self-extraction in children with AA. A 11-year-old male patient with AA was consulted from Pediatric Department Dr. Sardjito Hospital with prolonged bleeding on socket 63 because tooth self-extraction. On oral examination, there was socket bleeding, ulcer covered with a white membrane in the distopalatal of the socket and lips looked some petechiae. Patient was educated about oral hygiene maintenance, applying glycerin solution on the lips and using mouthwash. On third day, no visible change in the socket and ulcer, a few petechiae also seen on the lips. Gel containing hyaluronic acid-aloe vera was applied after debridement. Ten days later, the socket and ulcer healed, but a few petechiae still seen. Hyaluronic acid-aloe vera could help wound and ulcer healing on patient with AA.

Keywords: Aplastic Anemia; Tooth self-extraction; Ulcer; Hyaluronic acid-aloe vera

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INTRODUCTION

Aplastic Anemia (AA) is a disease that is usually characterized by pancytopenia with a decrease in the number of platelets and white blood cells, generated by the inability of blood formation by the bone marrow due to several pathophysiological mechanisms (1). The incidence of AA varies throughout the world, this disease is more prevalent in Asia than in Western countries. AA is a rare disorder, with an incidence of approximately 1,5 to 7 cases per million individuals per year. The prevalence of AA in Indonesia is estimated 2 to 5 cases per million population per year. Although the incidence of this disease is very rare, AA can affect all ages and is classified as potentially causing death (2). Although the pathophysiology of this disease remains exactly unknown, there are at least three theories to explain it, among others: abnormalities in the bone marrow which are replaced by fat due to chemical or physical damage (iatrogenic; benzene), destruction of the immune system, especially T cells, and a constitutional defect in genes that are important for maintaining cell integrity and immune regulation (1).

AA patients typically suffers from a decrease in the number of platelets, which serve as blood components that play an important role in thrombosis and hemostasis. A significant decrease in the number of platelets or a refrain from functioning will lead to a greater risk of bleeding. Hemostasis is a complex process that depends on the complex interactions of platelets, plasma coagulation cascades, fibrinolytic proteins, blood vessels and cytokine mediators (3). Patients with AA not only have a shortage of erythrocytes but also lack of leukocytes so that patient is very susceptible to infection (2). AA patient with injuries to hard or soft tissues will take longer to cure bleeding and wound healing than the normal. According that condition, thus it is necessary to use wound dressings which are expected to help wound healing. Hyaluronic acid is one of the wound dressing agents, and this substance is biocompatible, biodegradable, and lacks immunogenicity. Hyaluronic acid can be produced by our own bodies, but

it can also be derived from plants, namely aloe vera. Wound dressings made from hyaluronic acid have been proven to be effective and safe for use in acute wounds (4).

CASE REPORT

An 11-year-old boy with AA has been hospitalized for five days in the Pediatrics Department ward, was consulted by the Pediatric Department of Dr. Sardjito Hospital to the Dental Clinic for suffering from bleeding in the gums. His parents explained that in the previous week, the patient pulled out his own teeth which had started to shake. After extraction, he experienced continuous bleeding in the socket and suffered from a fever in the following day. Two days after extraction, the patient was brought to the Emergency Unit due to incessant bleeding. The patient did not dare to brush his teeth. The patient looks pale, with a weight of 33kg, height of 139 cm (Normal Body Mass Index), temperature of 36,6^{0}C, heart rate of 140x/minute, Respiratory Rate (RR) of 24x/minute, SpO^2 of 100%, a bounding pulse and warm acral. The patient received sandimmun therapy for 100 mg/12 hours, 10 days before receiving a transfusion of seven Thrombocyte Concentrates (TC). From the laboratory examination, his leukocytes were 0.3 x 10^3/µL and platelets were 7 x 10^3/µL. Examination on the first visit revealed bleeding in the socket of tooth 63, while on the distopalatal side there was an ulcer with diameter 2 cm covered with a white membrane and reddish border and on the lips there were scattered petechiae (Figure 1). Patients and his parents were educated to keep brushing his teeth using a soft toothbrush or using gauze and boiled water/NaCl, only on the teeth and were prevented from touching the gums. The patient and his parents were asked to apply a glycerin solution on the lips and use mouthwash. Evaluation would be done three days later.

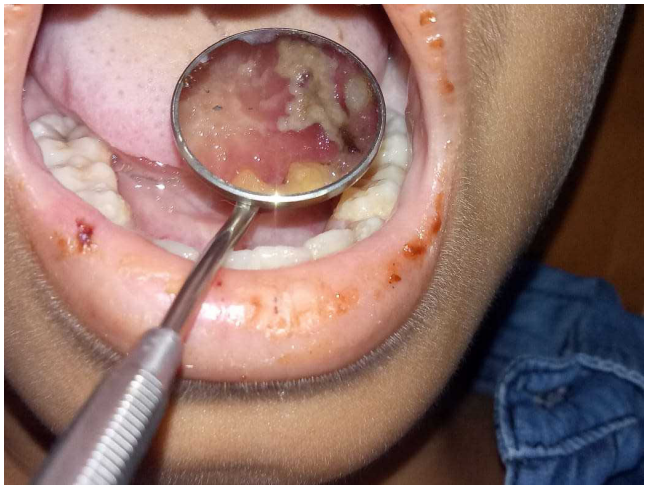

Figure 1 : Socket and ulcer day 1st.

At the second visit, the tooth socket 63 is still bleeding and the appearance of the ulcer is still the same. The number of petechiae is relatively the same as the previous visit. Debridement using gauze and NaCl was performed on tooth socket 63 and ulcer (Figure 2), then the socket and ulcer were dried using gauze and hyaluronic acid-aloe vera (kincare®) was applied. Patients and his parents were instructed to apply kincare® four times a day to sockets, ulcers, and petechiae according to the procedure. Three days later, the lesion had started to shrink and the bleeding had stopped. The lesion shrinks to form several small sections with diameter of approximately 0,5 cm with a white base and reddish edge (Figure 3). Evaluation was done seven days later.

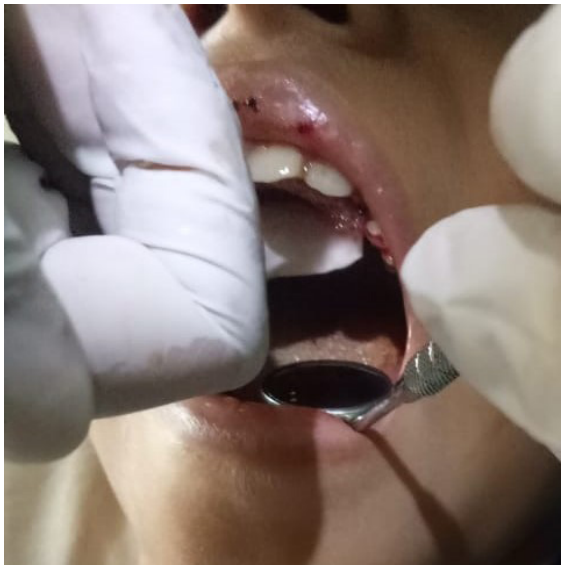

Figure 2 : Debridement of socket and ulcer.

Figure 3 : Socket and ulcer day 6th.

At the third visit, the ulcer appeared to have disappeared. The palatal mucosa in the distopalatal region of tooth socket 63, which had an ulcer, has returned to normal and has the same color as the surrounding mucosa, but there were still a few petechiae on the lips (Figure 4).

Figure 4 : Socket and ulcer day 13th.

DISCUSSION

At the first visit, the patient was asked to apply glycerin solution on the lips and use mouthwash (betadine), but 3 days later there was no change in the socket and ulcer. The inflammatory phase in wound healing process, including hemostasis and inflammation, ranging from the occurrence of the injury until 4-6 days afterward. The proliferative phase occurred on day 4-14 after the injury. The maturation and remodeling phase began 8 days after the injury and proceeded for about a year. On the second visit, the hemostasis process should have occurred and the blood had stopped, but in this case there was still no visible change. Disruption of the wound healing process may generate many manifestations, one of which is the occurrence of ulcers. This patient seemed to experience an ulcer in the distopalatal socket, which was still covered with a white membrane. Hemostasis is the process of preventing bleeding by retaining and keeping blood within the walls of damaged vessels. Platelets promote primary hemostasis through three main processes: activation, adhesion, and aggregation. In tissue injury, hemostatis mechanisms use a large number of vascular and extravascular receptors. Vascular spasm occurs whenever there is injury or damage to the blood vessels. This will trigger vasoconstriction, which can eventually stop blood flow. This reaction can be responded within 30 minutes, and is localized to the injured area. At this stage, exposed collagen fibers will release Adenosine Triphosphate (ATP) and other inflammatory mediators to recruit macrophages. In addition, the Extracellular Matrix (ECM) becomes highly thrombogenic, promoting platelet adhesion and aggregation. After vasoconstriction, exposed collagen from the damaged surface will encourage platelets to adhere, activate, and assemble to form a platelet plug, and thus closing the injured area (3). AA patients experienced longer wound healing due to disruption of the hemostasis process as a result of the reduced number of platelets in the patient, therefore platelet transfusions were administered to the patient.

At the second visit, no visible changes in the lesion. Patient was treated with debridement and application of wound dressing, hyaluronic acid-aloe vera (kincare®) was applied on the sockets and ulcers. Debridement was performed using gauze and NaCl, after which the socket and ulcer were dried using dry gauze. Afterwards, hyaluronic acid-aloe vera (kincare®) was applied to the sockets and ulcers. Patients and his parents were asked to apply kincare® four times a day on the sockets, ulcers, and petechiae. Wound debridement is an important step to remove necrotic tissue and foreign material in the wound area to help the healing process. An open wound cannot be effectively observed and examined if necrotic tissue is still present. The presence of necrotic tissue and foreign material in the wound also increases the risk of infection, sepsis, prolonged inflammatory phase and inhibits wound healing (5). Three days after the second visit, the ulcer began to shrink. The initial diameter of the ulcer was approximately 2 cm, and it decreased. Normally, ulcers will heal spontaneously after 7-10 days. In this case of AA patients, no changes were seen on the first and second visits, but the ulcer reduced in size after debridement and using the wound dressing for three days. The AA condition of patients not only affects wound healing in the socket but also in ulcers. Evaluation was carried out seven days later.

At the third visit, the socket had been cured and the ulcer was gone. Although petechiae were still visible from the initial visit to the third visit, their numbers began to decrease. Petechiae is a manifestation of a systemic disorder. Patients with blood disorders such as AA will frequently suffer from petechiae. Wound dressing has several characters, including wound cleansing, provide or maintain a moist wound environment, removal

of blood and excess exudate, gaseous exchange (water vapor and air), protect the wound from bacterial invasion, provision of thermal insulation, protect the wound from trauma, low frequency of dressing change. In this case, the wound and ulcer healing take longer because of the reduced number of platelets in the patient, which makes poor general condition of the patient and the bleeeding has not stopped, then the use of wound dressing is necessary. Hyaluronic acid-aloe vera is a wound dressing with a biomaterial derived from aloe vera. Biomaterials have advantage of forming part of the natural tissue matrix, are biodegradable and some play an active part in normal wound healing and new tissue formation. These characteristics make them attractive choices from a biocompatibility and toxicological point of view. Hyaluronic acid can act as bio adhesive carriers for delivering growth factors to the wound sites and is proven to be efficient and effective in wound healing (5).

CONCLUSION

Hyaluronic acid-aloe vera could help wound and ulcer healing on patient with AA.

ACKNOWLEDGEMENT

We would like to express our gratitude to the Pediatric Department and Dental Department of Dr. Sardjito Hospital for their contribution in this research.

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