Ulcerated Hemangiomas : Clinical Features and Management

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Abstract

Hemangioma is the most common tumor of infancy and ulceration is the most frequent complication of hemangioma. The purpose of this report was to review the clinical features and management of ulcerated hemangioma. A retrospective study of ulcerated hemangioma at the outpatient pediatric dermatology clinic, King Chulalongkorn Memorial Hospital from 1992 to 2001 was performed. The medical records of 41 patients were reviewed. Twenty-eight females and 13 males were seen with a female/male ratio of 2.2 : 1. Superficial hemangioma was the most common type (51%). Head and neck were the most frequently involved sites, affecting 21 cases (51%). Ulcerated hemangiomas were found on extremities, torso, and perineum of 9 patients (22%), 6 patients (15%) and 5 patients (12%), respectively. Ulceration was developed at a mean age of 3.9 months (range, 1-7 months). Conventional treatment with topical and/or systemic antibiotic was successfully used in 19 patients (46%). Oral prednisolone was used in 4 patients with large hemangiomas. The mean duration of treatment with oral prednisolone was 12 months. Flashlamp-pumped pulsed-dye laser (FPDL) was used in 16 patients who failed topical and/or systemic antibiotic. Fifteen patients (94%) healed within 1 to 3 treatments. Excision was done on a small superficial hemangioma on the cheek. In conclusion, head and neck were the most common sites of ulcerated hemangioma. Topical antibiotics and/or systemic antibiotics could be used as the first-line management of ulcerated hemangioma. FPDL was very effective in the treatment of ulcerated hemangioma.

Key word : Ulcerated Hemangioma, Topical Antibiotic

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Hemangioma is the most common tumor of infancy[1,2]. Its natural course shows three phases: a rapid proliferation, stable period and a slow involution. Although all hemangiomas have spontaneous involution, complications have been found in 32 per cent[3]. Ulceration is the most common complication, affecting between 5 per cent and 21 per cent of all hemangioma[1-3]. Management of an ulcerated hemangioma includes dressings, topical antibiotics, systemic antibiotics and flashlamp-pumped pulsed-dye laser (FPDL) therapy[4-8].

The purpose of this report was to review the clinical features and management of ulcerated hemangioma.

MATERIAL AND METHOD

Forty-one cases of ulcerated hemangioma were seen at the Pediatric Dermatology Clinic, Department of Pediatrics, Faculty of Medicine, Chulalongkorn University from 1992 to 2001. Each chart was reviewed. The following information was extracted from each patient file: sex, age at onset of hemangioma, type of hemangioma, anatomical location, size of hemangioma, age at time of first ulceration, treatments received and their outcome. In each case, natural history, complications, follow-up and treatment plans were explained to the parents on the first visit (Fig. 1). Ulcerated lesions and infection were treated with dressing, topical and/or systemic antibiotic. If there was no response, oral prednisolone was used in cases with large, rapidly growing hemangioma. Excision was done on a small superficial hemangioma due to maternal wishes. The use of FPDL began in 1997.

RESULTS

Among the 41 ulcerated hemangiomas, 28 females and 13 males were seen with a female/male ratio of 2.2:1. Nine patients (22%) were premature infants. Hemangiomas were present at birth, within the first month, and after the age of 1 month in 24 patients (58%), 14 patients (34%), and 3 patients (7%), respectively. According to the type of hemangioma, 39 patients (95%) were superficial hemangioma. Eighteen of the 39 patients also had deep component and were classified as superficial-deep hemangiomas. Only two patients (5%) had carvernous hemangioma.

Head and neck were the most frequent sites of involvement, affecting 21 cases (51%). Ulcerated hemangiomas were found on extremities, torso, and perineum in 9 patients (22%), 6 patients (15%) and 5 patients (12%), respectively. Ulceration developed between 1 and 7 months, with a mean age of onset at 3.9 months. The size of the hemangiomas ranged from 0.25 to 110 cm^2 (mean = 21.14 cm^2).

Management of hemangioma is summarized in Table 1. Conventional treatment with topical and/or systemic antibiotic was successfully used in 19 patients (46%). Four patients who had large hemangiomas were treated with prednisolone after infection was controlled. The mean size of hemangiomas treated with prednisolone was 53.75 cm^2. The mean duration of treatment with prednisolone was 12 months. No recurrent ulceration was found.

FPDL was used in 16 patients who did not respond to topical and/or systemic antibiotics. Fifteen patients were healed after 1 to 3 treatments with a 2-week interval. One case was lost to follow-up. On follow-up, 3 of the 15 patients had developed new ulceration within the same hemangioma. Two patients had 3 ulcerations and one patient had 2 ulcerations. Excision was done on a small superficial hemangioma, size 1 x 1 cm, on the cheek on the request of the patient's mother.

DISCUSSION

The majority of ulcerated hemangiomas (95%) are superficial or combined superficial-deep hemangiomas. The mechanisms of ulceration are poorly understood. Friction and rapid enlargement of the hemangioma may be a contributing factor, because ulceration most commonly occurs during rapid proliferation and the common sites of ulceration are head, neck and perineum[3]. Ulceration can lead to bleeding, infection and scarring[1,2,7]. Ulceration at the perineum can be extremely painful on urination or defecation[2,8]. Some ulcerated hemangiomas are difficult to treat[8]. Normally, wound healing has three phases: inflammation, tissue formation, and tissue remodeling[9]. During the period of wound healing, epidermal cells from skin appendages remove clotted blood and damaged stroma from the wound space. Migrating fibroblasts in the wound are responsible for synthesis, deposition and remodeling of the extracellular matrix. The formation of new blood vessels is necessary to sustain the newly formed granulation tissue. Once the wound is filled with new granulation tissue, angiogenesis ceases and many of the new blood vessels disintegrate as a result of apoptosis. Histopathological findings in early infantile hemangioma are composed of plump endothelial cells that line vascular spaces with small inconspicuous lumina and

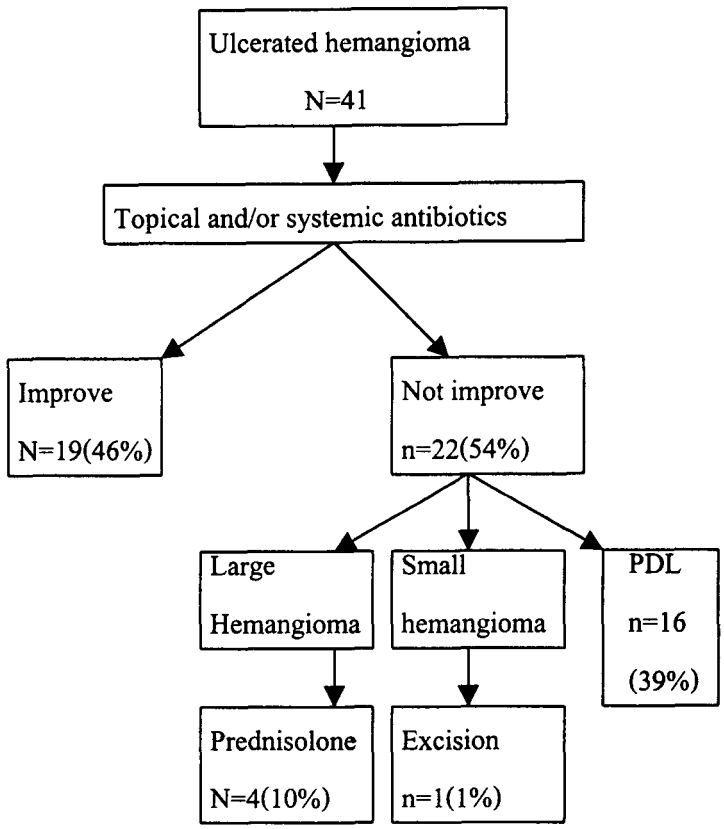

Fig. 1. Management of ulcerated hemangioma.

numerous mast cells in the intervening stroma[10]. In hemangioma, most of the cells are capillary endothelium with no skin appendage in the tumor. As mentioned above, epidermal cells from skin appendages and fibroblasts are essential to cutaneous wound healing. Lack of these cells may be the contributing factor for delayed wound healing.

Precise mechanism in controlling the growth and involution of hemangiomas is not clear. During the tissue proliferation period, cellular markers of angiogenesis including proliferating cell nuclear antigen, type IV collagenase, basic fibroblast growth factor, vascular endothelial growth factor, vascular endothelial growth factor, urokinase, and E-selectin, Ki-67 can be identified by immunochemical analysis [11,12]. Erythrocyte-type glucose transporter protein GLUT1 is a marker for juvenile hemangioma found in all phases of the lesion[13]. The mechanism that controls the involution of hemangioma is poorly understood[2]. Treatment of ulcerated hemangiomas includes dressings, topical antibiotics, systemic antibiotics, lasers and systemic corticosteroids. Many dressings have been used in ulcerated hemangiomas such as vasaline impregnated gauze and hydrocolloid, barrier creams[7,8]. Topical antibiotics are usuful to treat and prevent secondary infection. In the presented cases, topical antibiotics were used on all patients to prevent secondary bacterial infection in ulcerated hemangioma. In infected lesions, topical antibiotic with or without systemic antibiotics were used successfully in 19 patients (46%).

Various lasers can be used to treat hemangiomas. FPDL is relatively vessel specific[14]. It is a selective photothermolysis, with a wavelength of 585

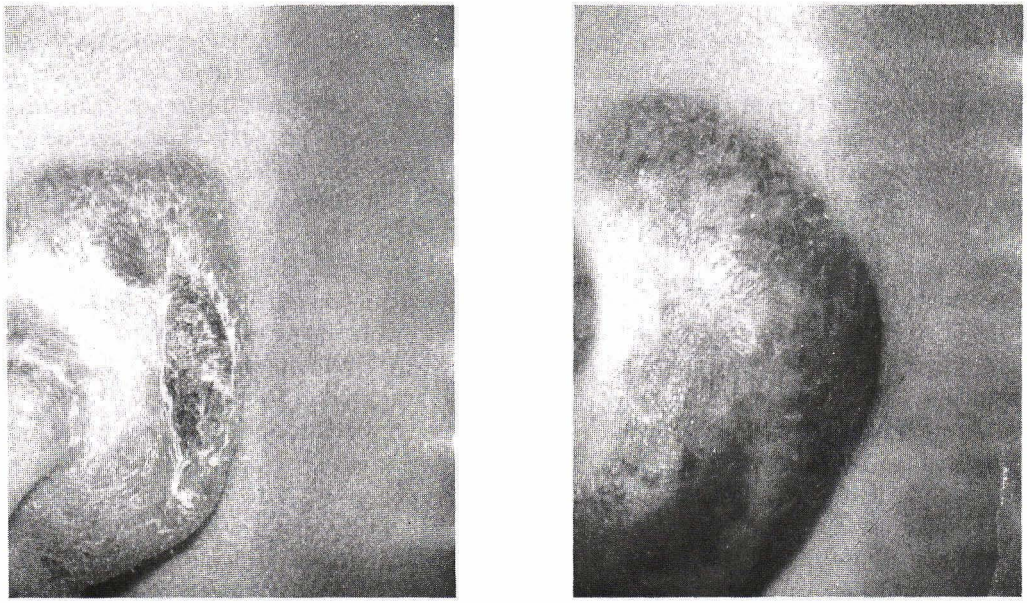

Fig. 2. Ulcerated hemangioma at the left ear (Left). He was treated with pulsed-dye laser (Right). This is a picture taken one moth after a single treatment.

Table 1. Ulcerated hemangiomas treated with flashlmp-pumped pulsed-dye laser.

Patient No.	Sex	Type	Age* (month)	Location	Size** (cm^2)	Duration of ulcer (wk)	Fluence (J/cm^2)	Treatment (No)	Remark
1	F	Combined	2	Perianal	2 x 3	8	4.25	1	Good response
2	F	Combined	4	Mouth and cheek	2 x 4	8	4.75	1	Good response
3	F	Superficial	3	Labia majora	5 x 5	4	5.5	2	Pain relief in one treatment
4	M	Superficial	5	Neck	4 x 3	2	5.5	1	Good response
5	F	Superficial	3	Perianal	6 x 3	0.5	6	2	Good response
6	F	Superficial	4	Submandibular	N/A	2	5	1	Loss to follow-up
7	F	Superficial	6	Labia majora	3 x 2	4	5.5	1	Three new ulceration
8	F	Combined	7	Buttock	10 x 10	4	6	1	Good response
9	F	Superficial	5	Arm	3 x 3	3	6.5	2	Good response
10	M	Superficial	3	Leg	5 x 5	1	4.25	1	Good response
11	M	Superficial	3	Perianal	3 x 4	2	5	2	Good response
12	F	Combined	5	Neck	5 x 6	2	6	2	Two new ulceration
13	F	Combined	5	Abdomen	4 x 6	2	5.25	3	Good response
14	F	Superficial	1	Cheek	4 x 5	2	6	4	Two new ulceration
15	F	Superficial	3	Ear	3 x 5	1	6.25	3	Good response

* Age, age of onset of ulecration, ** size of hemagioma, N/A, Data no available

nanometre (nm) which is close to the peak absorption of oxyhemoglobin and has a relatively trough absorption of melanin[15]. A pulse duration of 450 milliseconds allows damage of the targeted blood vessels without damaging the surrounding tissues. The laser beam can penetrate 1.2 mm into the tissue[16]. In ulcerated hemangioma, FPDL can promote wound healing, decrease pain and accelerate involution[4, 17]. The FPDL has become the treatment of choice for port wine stains[18]. It is effective in superficial hemangioma[19] and ulcerated hemangiomas[14]. The precise mechanism of action is still unknown, but FPDL may damage rapid proliferated blood vessels and allow normal formation of matrix and epithelial

migration[14]. In the present series, FPDL was very effective within 1 to 3 treatments, as in previous reports[4]. On follow-up, 3 cases had new ulceration in the same hemangioma. Kim et al[8] reported that FPDL was effective only in 50 per cent of their patients. Eighteen per cent showed no significant response and 5 per cent became worse with the therapy. Most of the reported cases were referred and the low response in the present series might be attributed to delayed treatment.

Other lasers that have been used in vascular lesions are argon laser and Neodymium: Yttrium-aluminum-garnet (ND: YAG) laser. Argon laser has been used since 1981 to treat superficial hemangioma; it has a wavelength of 514 nm. The wavelength overlaps between that of oxyhemoglobin and melanin absorption. Epidermal damage occurs as the light traverses the epidermis to the dermal vasculature and results in vesiculation and crusting[18]. It causes inadvertent thermal injury to the adjacent non-vascular tissues, which increases the risk of scarring and textural changes. ND: YAG laser produces near-infrared light at a wavelength of 1,064 nm. Frequency-doubled produces a green light with a wavelength of 592 nm. The wavelength overlaps the absorption spectrum of oxyhemoglobin and melanin. It can be used to treat both vasculur lesions and benign pigmented lesions[11]. It has a high risk of scarring and has to be performed under general anesthesia in children[5]. ND: YAG laser can coagulate to a depth of 5-6 mm. This laser can be used in deep hemangioma or in extensive, ulcerated, bleeding hemangioma[5,20].

Systemic corticosteroid is the drug of choice in hemangiomas with obstruction and deformity[1,2,7]. The response rate was from 30 per cent to 90 per cent [7,21]. In the present series, however, prednisolone was used to treat 4 patients (10%) with large hemangioma and ulcertion, after infection improved with topical and systemic antibiotics. All patients had good response to 3-4 mg/kg/day of prednisolone. The duration of treatment was from 10 to12 months. Surgery can be used in small, ulcerated hemangioma that fail topical and or systemic antibiotic treatment.

In conclusion, head and neck were the most common sites of ulcerated hemangioma. Topical antibiotics and/or systemic antibiotics could be used as first-line management of ulcerated hemangioma. FPDL was very effective in the treatment of ulcerated hemangioma.

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ฮีแมงจิโอมาที่แตกเป็นแผล : ลักษณะอาการทางคลินิกและการรักษา

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ฮีแมงจิโอมาเป็นเนื้องอกที่พบบ่อยที่สุดในทารก และการแตกเป็นแผลเป็นภาวะแทรกซ้อนที่พบได้บ่อยที่สุดของฮีแมงจิโอมา วัตถุประสงค์ของการศึกษานี้คือ รวบรวมลักษณะอาการและการรักษาของฮีแมงจิโอมาที่มีแผล การศึกษานี้เป็นการศึกษาย้อนหลังโดยรวบรวมผู้ป่วยที่มารับการรักษาที่คลินิกโรคผิวหนังเด็ก โรงพยาบาลจุฬาลงกรณ์ ตั้งแต่ปี พ.ศ. 2535 ถึงปี 2544 มีผู้ป่วยทั้งสิ้น 41 คน เป็นหญิง 28 คน ชาย 13 คน อัตราส่วนหญิงต่อชาย = 2.2 : 1 ฮีแมงจิโอมาชนิดที่พบบ่อยที่สุดคือชนิดที่อยู่ตื้น (superficial) ตำแหน่งที่พบบ่อยที่สุดคือ ที่หน้า และคอ ในตำแหน่งที่ แขนขา, ลำตัว และที่ perineum พบร้อยละ 22, 15 และ 12 ตามลำดับ อายุเฉลี่ยที่พบคือ 3.9 เดือน (อยู่ในช่วง 1–7 เดือน) การรักษาด้วยการทายาปฏิชีวนะและ/หรือกินยาปฏิชีวะได้ผลในผู้ป่วย 19 ราย (ร้อยละ) ให้กินยาเพร็ดนิโซโลนในรายที่มีก้อนขนาดใหญ่ 4 ราย ระยะเวลาเฉลี่ยที่ให้กินยาเพร็ดนิโซโลน คือ 12 เดือน ส่วนเลเซอร์สำหรับปานแดง flashlamp–pumped pulsed–dye laser ใช้ในเด็ก 16 คน ที่แผลไม่ดีขึ้นหลังให้ยาปฏิชีวนะชนิดทาหรือชนิดรับประทาน เลเซอร์สำหรับปานแดงได้ผลดีในผู้ป่วย 15 ราย ในการรักษา 1–3 ครั้ง มีผู้ป่วย 1 ราย ที่มีฮีแมงจิโอมาขนาดเล็กที่ตัดก้อนเนื้องอก โดยสรุป ตำแหน่งที่พบฮีแมงจิโอมาที่แตกเป็นแผลบ่อยที่สุดคือ ที่ศีรษะ และคอ การรักษาที่ใช้เป็นอันดับแรกคือยาปฏิชีวนะชนิดทา และ/หรือรับประทาน ในรายที่ไม่ได้ผลการใช้เลเซอร์สำหรับปานแดงได้ผลดีมากในการรักษา

คำสำคัญ : ฮีแมงจิโอมาที่แตกเป็นแผล, ยาปฏิชีวนะชนิดทา, ยาเพร็ดนิโซโลน, เลเซอร์สำหรับปานแดง

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