Multiple Satellite Pyogenic Granuloma

— *Transmission Electron Microscopic Study* —

Son Won Byeon, M.D., Soo Min Kim, M.D., Soo Il Chun, M.D.

Department of Dermatology, Yonsei University College of Medicine, Seoul, Korea

Multiple satellite pyogenic granuloma developed on the left upper back of a 14-year-old boy after excision of a hemangioma-like lesion. He has had nevus flammeus on the left upper arm since birth with fine linear telangietasiae around the main lesions. Histopathology showed the capillary proliferation in the dermis, and transmission electron microscopy revealed multiple Weibel-Palade bodies, considered an early endothelial cell marker, in the cytoplasm of the endothelial cells. We believe this patient may have the propensity to develop different angiomatous lesions. (Ann Dermatol 3:(1) 72—76, 1991)

Key Words: Multiple Satellite Pyogenic Granuloma, TEM

Granuloma pyogenicum is a reactive proliferating angiomatous tumor often arising at the site of trauma. It almost always occurs as a solitary lesion on exposed surfaces such as the hands, forearms and face[1]. Granuloma pyogenicum may occur as a subcutaneous, intradermal or intravenous nodule[2,3]. In rare instances, multiple small angiomatous satellite lesions appear following the removal of granuloma pyogenicum[4,5]. These may occur either with or without recurrence of the primary lesion.

Through transmission electron microscopic studies we report herein a case of multiple satellite pyogenic granuloma in a patient with nevus flammeus and telangiectasiae.

REPORT OF A CASE

A 14-year-old boy presented with multiple hemorrhagic lesions on the left upper back. Two months ago, at a private clinic, an 1.0cm sized rapidly growing angiomatous lesion was excised from the left upper back. Ten days after the surgery, similar lesions appeared around the site of the previous excision which gradually increased in size and number. At initial presentation these were pinpoint red colored macules which gradually became papular and nodular in configuration.

Physical examination was remarkable for numberous 0.2 to 1.0cm sized red sessile papules and coalesced nodules around the well healed scar on the left upper back (Fig. 1A). There were fine linear telangiectasiae around the main lesions. In addition, a nevus flammeus was present along the left upper arm.

Biopsy of the angiomatous lesions showed a flattened epidermis with underlying capillary proliferation of the upper and mid dermis (Fig. 2). The irregularly dilated capillaries were embedded in an edematous and myxoid stroma and lined by single endothelial cells (Fig. 3). By electron microscopy, the capillaries were lined by cuboidal cells which protruded into the vascular lumina (Fig. 4). The cytoplasm of the endothelial cells contained many mitochondria, rough endoplasmic reticulum, dense bodies and pinocytotic vesicles (Fig. 5). Weibel-Palade bodies were a prominent cytoplasmic feature. These membrane bound organelles measured 0.6μ wide, up to 4.5μ

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Reprint request to: Soo Il Chun, M.D., Department of Dermatology Yonsei University College of Medicine C.P.O. Box 8044 Seoul, Korea

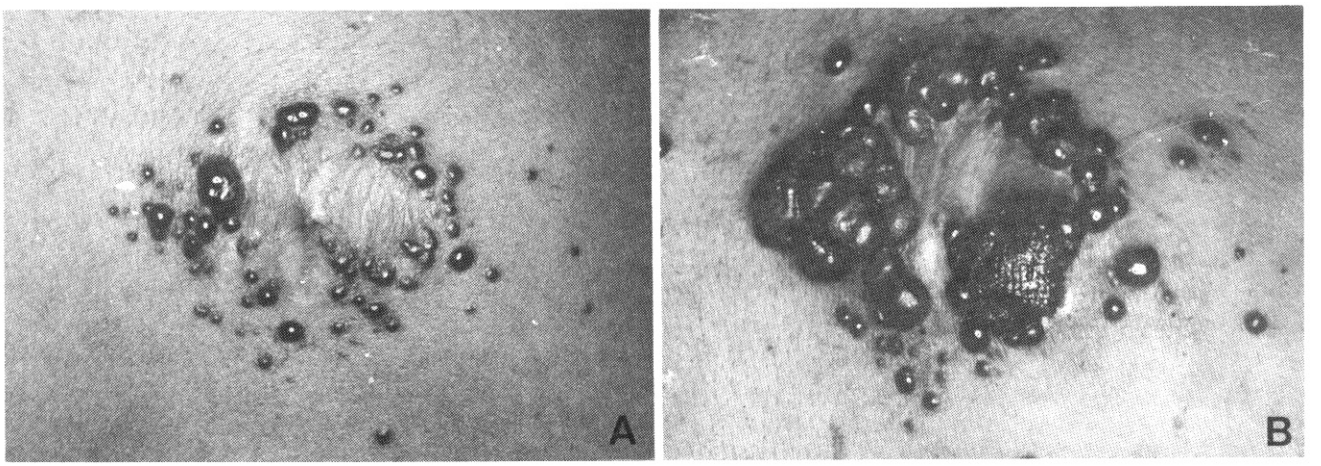

Fig. 1. Numerous 0.2 to 1.0cm sized red sessile papules and coalesced nodules around the scar(A) on the left upper back and grouped or raspberry-like lesions three months later(B).

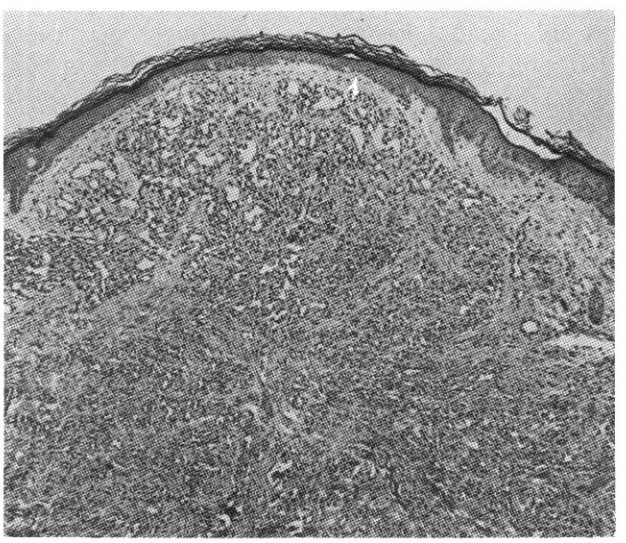

Fig. 2. Biopsy of the angiomatous lesions showed a flattened epidermis with underlying capillary proliferation of the upper and mid dermis (H & E stain, ×40).

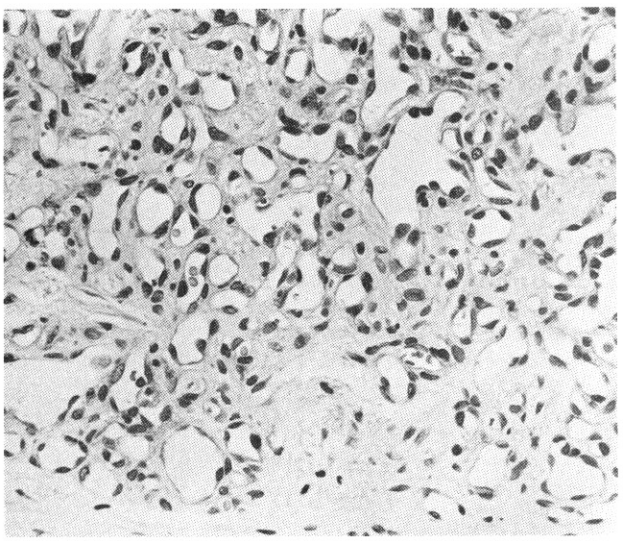

Fig. 3. Irregularly dilated capillaries were embedded in an edematous and myxoid stroma and lined by single cuboidal to columnar endothelial cells (H & E stain, ×200).

long and contained numerous fine tubules up to *830 Å* thick, embedded in a dense matrix and arranged parallel to the long axis of the rod. Weibel-Palade bodies were observed in many shapes such as rod, club, commet, boomerang, and cylindrical forms (Fig. 6). The endothelial cells were joined by tight junctions and surrounded by basal lamina around which collagen fibers were seen.

After the initial skin biopsy, the skin lesions were left untreated. At a follow up visit three months later, the lesions appeared larger in size and had a grouped or raspberry-like appearance (Fig. 1B). Treatment with pulsed dye laser was unsuccessful. Using cryosurgery with liquid nitrogen, most of the lesions resolved. The remaining lesions were treated successfully with 100% trichloracetic acid.

DISCUSSION

Multiple satellite granuloma pyogenicum is a rare occurence. Since it was first described by Reitmann in 1908, about 30 cases have been reported[4-12], primarily in young male children or

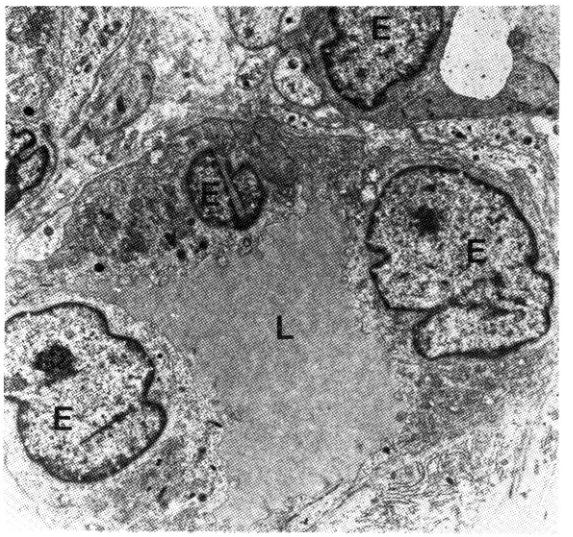

Fig. 4. Capillary was lined by cuboidal cells(E) which protruded into the vascular lumina(L) (×5,928).

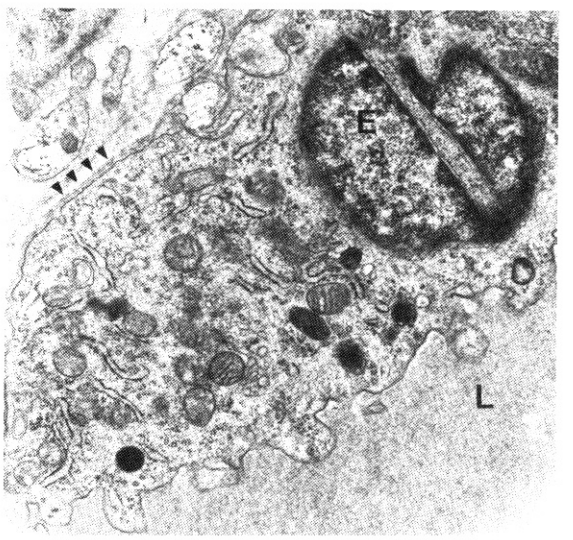

Fig. 5. With high magnification of Fig. 4, cytoplasm of endothelial cell which was lined by basal lamina (arrow head), contained many mitochondria, rough endoplasmic reticulum, dense bodies and pinocytotic vesicles (×17,480).

adolescents. The satellite lesions characteristically appear within 1 to 5 months after removal of the primary tumor by excision, curettage, or cauterization. The skin lesions are described as numberous small, shiny, bright red papules around the site of the original lesion. The most common site is the trunk, particularly the scapular region, although this is a rather rare location for solitary granuloma pyogenicum.

Histopathologically, the epidermis was thin. The tumor was composed of numerous newly formed capillaries, lined by single endothelial cells projecting into the lumina, giving a "tombstone-like" appearance. The surrounding stroma was edematous[5,6]. By electron microscopy, Weibel-Palade bodies were abundant in the endothelial cells of satellite pyogenic granuloma[12]. The Weibel-Palade body is a long, cylindrical rod-shaped cytoplasmic organelle, first described in the endothelial cells of small arteries in various organs of rats and man[13]. This structure, which appears to be a marker of endothelial differentiation has been subsequently reported in fetal skin, cultured endothelial cells[14] and numerous vascular tumors such as strawberry hemangioma, cellular hemangioma (benign hemangioendothelioma, juvenile hemangiopericytoma)[14], angioblastoma[15], and Kaposi's sarcoma[16].

In our case, multiple satellite pryogenic granuloma appeared 10 days after excision of a hemangioma-like lesion on the upper back, and the endothelial cells had multiple Weibel-Palade bodies in their cyoplasm, which were shaped as rod, club, commet, boomerang and cylinder. In previous reports, satellite pyogenic granuloma either involved or remained unchanged when left untreated, and there were no evidence of malignancy[5]. In contrast, the lesions in our patient grew rapidly during a three month follow up period. The simultaneous appearance of multiple lesions following trauma and the emergence of pyogenic granuloma from the lesion of a portwine stain, spider angioma has been previously reported[5, 9, 17]. Our case is unique in that three different vascular lesions were present; nevus flammeus, granuloma pyogenicum, and telangiectasiae. We believe our patient may have a propensity to develop cutaneous vascular lesions.

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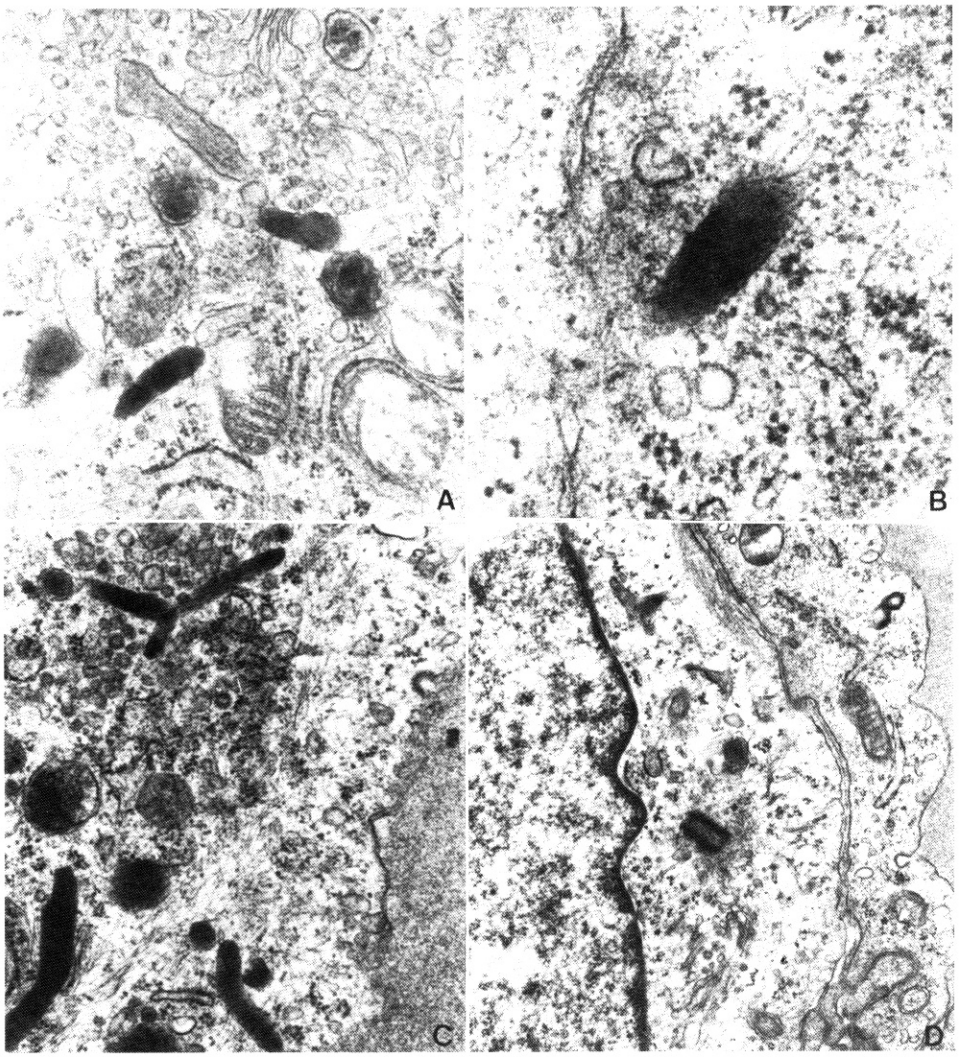

Fig. 6. Membrane bound Weibel-Palade bodies contained numerous fine tubules and were observed in many shapes such as rod, club(A), commet(B), boomerang(C), and cylindrical forms (A; ×20,000, B; ×110,960, C; ×43,320).

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