nosis was benign PNs based on the overall benign architectural features. As shown by this case, the hormonal changes during pregnancy can be associated with various clinical and histopathological changes of CMN. However, even during pregnancy, whenever exclusion of malignant melanoma is required, proper procedures should be performed immediately.

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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Scrotal Calcinosis in Brothers

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Dear Editor:

Scrotal calcinosis (SC) is a rare pathological condition characterized by painless, hard, asymptomatic nodules on scrotal skin without any tissue injury or metabolic derangement. The nodules are generally skin-colored, yellowish or white, and consist of calcium and phosphate deposits. SC usually affects patients in childhood or early adulthood. Because of the age of onset and location of occurrence, the condition may be a cause of embarrassment or misunderstanding. We describe the cases of two young adult patients with SC, who were brothers.

Two healthy Korean men, aged 22 and 23 years old, respectively, presented with scrotal nodules that gradually increased over time. The nodules first appeared in adolescence and increased in size and number during the previous 5 to 6 years. Both of the patients denied trauma, associated symptoms, or any prior treatments. There was no history of other systemic inflammatory or metabolic disease. Physical examination revealed multiple firm, non-tender, whitish papules on the scrotums of both patients (Fig. 1A, B). Skin biopsy was performed on both of the patients, and multiple calcium deposits and basophilic globules were found in the dermis (Fig. 1C, D). Routine laboratory examinations including serum calcium and phosphorus were all within normal limits. The possibility of tumoral calcinosis was ruled out, as both the patients had rela-

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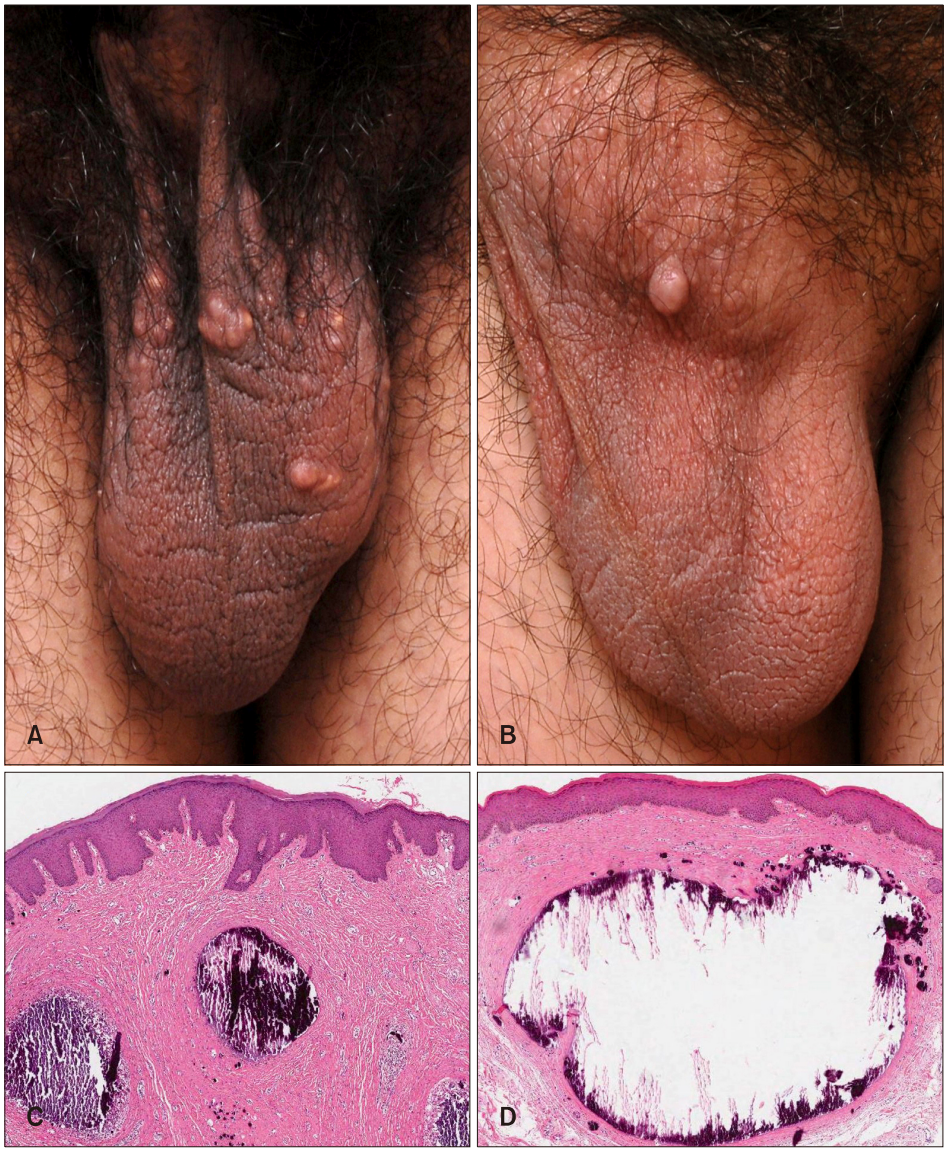

Fig. 1. (A, B) Several yellowish or whitish papules and nodules were present on the scrotums of both patients. (C, D) On skin biopsy, calcium deposits and basophilic globules of different sizes were observed in the dermis. The globules were surrounded by histiocytes and an inflammatory giant cell reaction was seen (H&E, ×40).

tively small calcified nodules confined to the scrotum. The patients were diagnosed with SC and reassured of its benign nature; they remain in clinical follow-up.

SC was first described in 1883 by Leweinski and was established as a distinct entity by Shapiro et al. in 1970[1]. It was initially termed idiopathic SC; however, although the etiology of the condition is still not fully elucidated, many physicians have come to believe that at least some SC is not genuinely idiopathic[2]. There are several major hypotheses for the origin. SC may be: 1) truly idiopathic, 2) secondary to calcification of epidermal inclusion cysts, 3) related to eccrine cysts of the scrotum, or 4) result from dystrophic calcification in the smooth muscle[2]. In our case, the calcifications were occasionally surrounded by histiocytes and giant cells, but did not have cystic membranes. However, we cannot rule out the possibility of epidermal cyst degeneration, despite the absence of epithelial elements[3].

An extensive search of the literature did not find any familial cases of SC. Thus, we report the first case of SC in brothers. Multiple hypotheses have been considered in the pathogenesis of SC, but to be truly idiopathic, the possibility of patient factors (e.g., age, underlying morbidity, diet, medications, socioeconomic status, and genetic determinants) should be excluded. Our case suggests that SC, at least in part, may not be idiopathic[4].

CONFLICTS OF INTEREST

The authors have nothing to disclose.

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A Case-Control Study of Skin Cancer and Exposure of Toxic Heavy Metals

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Dear Editor:

The prevalence of skin cancer is increasing in Korea[1]. Although increased public awareness has contributed to this trend, other risk factors or mechanisms in addition to ultraviolet-exposure may be involved. It is known that exposure to heavy metals contributes to the development of skin cancers[2]. The main threats to human health are associated with toxic heavy metals, such as arsenic, cadmium, chromium, and lead[2]. However, there have been few quantitative analyses of the effects of toxic heavy metal exposure on the risk of skin cancer. Therefore, this study examined exposure levels to toxic heavy metals in skin cancer patients and community controls through analysis of serum and urine samples.

A total of 138 biopsy-proven skin cancer patients (84 with basal cell carcinoma, BCC; 30 with squamous cell carcinoma, SCC; 14 with malignant melanoma; and 10 with other cancers, including dermatofibrosarcoma protuberans, eccrine porocarcinoma, and sebaceous carcinoma) and 142 community controls were included in the study. Controls volunteered for this study, and were selected based on the sex- and age-distribution ratio in the skin cancer group; controls underwent health examinations at the Dong-A University Hospital. The study was approved by the institutional review board of Dong-A University Medical Center (IRB no. 16-075). Written informed consent was obtained from all patients before participation.

Peripheral blood and urine samples were collected before breakfast. We used 10 mg/L multi-element calibration standards (Agilent Technologies, Santa Clara, CA, USA) to prepare 7 precalibration levels, from 0.05 ppb to 20 ppb. Then, a 1:100 dilution of the precalibrators was prepared in a basic diluent solution. Samples were prepared with a simple 1:10 dilution in this basic diluent. Rhodium (10 mg/L; Agilent Technologies) was used as an internal standard.

Heavy metal levels were measured using an inductively-coupled plasma-mass spectrometer (7700x; Agilent Technologies). To ensure accuracy, quality control was performed using standard samples (Whole Blood Metal

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