

A Prospective Study of Cutaneous Calcifications and Clinicopathologic Correlations.

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ABSTRACT

Background: Cutaneous calcifications or calcinosis cutis is an interesting lesion, wherein the skin, soft tissues and in the walls of small/medium sized veins, arteries. The aim of the present study is to evaluate the calcinosis cutis or cutaneous calcification prevalence and also its correlation with age, sex, site of the lesion, clinical features and histopathological findings. **Methods:** A 5 years prospective study was on 40 patients suspected to have calcinosis cutis. Surgical excision of skin lesions was also performed to do the histopathological study. **Results:** Women presented with lesions around the waist commonly. Males presented with lesions at different sites like over dorsum of legs and fore arm most commonly. Out of 40 cutaneous calcifications, 14 (35%) were Asymptomatic, 12 (30%) were painless papules/nodules, 8 (20%) were ulceration with or without discharge, 6 (15%) were painful papules/nodules. **Conclusion:** As the Cutaneous calcifications were mostly asymptomatic or painless, need to evaluate the carefully and treat if there is any underlying pathologies. Calcinosis cutis individuals should be educate and counsel regarding underlying pathologies and treatment.

Keywords: Cutaneous calcifications, Histopathology, Skin lesions.

INTRODUCTION

Cutaneous calcifications or calcinosis cutis is an interesting lesion, wherein the skin, soft tissues and in the walls of small/medium sized veins, arteries.^[1] Virchow initially described calcinosis cutis in 1855.^[2]

Calcinosis cutis is an uncommon disorder. Many factors such as injury, inflammation, infections, varicose veins, tumors, diseases of connective tissue, hypercalcemia and hyper phosphatemia can result this condition, but many cases are idiopathic. Calcinosis is seen in a Limited Cutaneous Systemic Sclerosis, also known as CREST syndrome.

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Cutaneous calcifications are of four types commonly. They are: Dystrophic calcinosis cutis, Metastatic calcinosis cutis, Iatrogenic calcinosis cutis and Idiopathic calcinosis cutis.^[3] Rare types of cutaneous calcifications are calcinosis cutis circumscripta, calcinosis cutis universalis, tumoral calcinosis, transplant associated calcinosis cutis.^[4]

Dystrophic calcification is associated with soft tissue injury, infections, connective tissue disorders like dermatomyositis, systemic sclerosis, cutaneous lupus erythematosus.^[5,6] It is the most commonest type. Metastatic calcification is due to systemic excess calcium imbalance, which is caused by hyperparathyroidism, paraneoplastic hypercalcemia, milk-alkali syndrome, paget's disease, chronic renal failure, sarcoidosis, calciphylaxis.

Iatrogenic calcinosis cutis is associated subcutaneous administration of calcium containing heparin^[7] and phosphate. In idiopathic, calcification is localized to one site, where patho-genetic mechanism is not clearly understood and the etiology is unknown.

Skin lesions can be painless or painful. Symptom less lesions develops gradually firm, whitish /yellowish papules, plaques or nodules on the surface. Multiple lesions are more common may become tender, ulcerate, discharge of chalk like creamy material containing mainly calcium phosphate and carbonate. In severe cases, lesions can progress to cutaneous gangrene.

Calcinosis cutis is a rare disorder, lesser studies were published. We have done a five years prospective study with the aim to evaluate the calcinosis cutis or cutaneous calcification prevalence and also its correlation with age, sex, site of the lesion, clinical features and histopathological findings.

MATERIALS AND METHODS

The present study was conducted in Department of Pathology, Government Medical College, Ananthapuramu for a period of 5 years. A prospective study was started after institutional approval, as cutaneous calcifications were correlated with clinical features.

Many patients were attending Surgical and DVL Outpatient departments with various complaints related to the skin. A total of 40 patients presenting with skin nodules anywhere on the body, with varied sizes or with complaints of pain, ulceration, ulceration with discharge were included in this study.

Patient details regarding age, sex, socioeconomic status, literacy, site of the lesion, habits, lifestyle, any significant past or family history were noted. General and systemic examination was done. Local examination of skin lesions was performed.

After examination, those patients who were suspected to have cutaneous calcifications were advised to investigate for serum calcium and serum phosphate levels especially. Patients were hospitalized and were also investigated to rule out the various primary causes responsible for cutaneous calcifications. Investigations including routine blood examination, renal function tests, parathyroid hormone assay, LDH, X-ray. Surgical excision of skin lesions was also performed to do the histopathological study.

Surgical specimens after excision were fixed in formalin and sent to the Department of Pathology for routine histological processing.

Gross examination of skin specimens revealed gritty to cut and chalky white areas were shown. After routine processing of specimens, those were stained by Hematoxylin and eosin stain. Histologically, lesions shown basophilic masses with massive calcium deposits.

All the results were recorded and analyzed. Statistical analysis was done in the form of percentage, proportions, Histogram.

RESULTS

A total of 40 patients who were suspected to have calcinosis cutis, were underwent excision biopsy. All the surgical biopsy specimens were routinely processed for histologically examination for the confirmation of cutaneous calcifications.

Peak incidences of cutaneous calcifications were seen in the age group of 41-60 years. Out of 40 patients, 20 were in the age group of 41-50 years, 10 were > 60 years. Only 2 were in paediatric age group [Table 1].

Out of 40 patients of calcinosis cutis, most of them were females. 24 (60%) were females, predominant when compared to males [Figure 1].

Table 1: Age distribution of Cutaneous calcifications.

Age in Years	No. of patients	Percentage
0-20	02	5%
21-40	08	20%
41-50	20	50%
> 60 years	10	25%
Total	40	100%

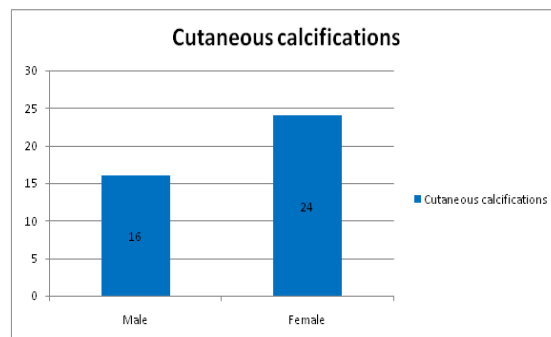


Figure 1: Cutaneous calcifications distribution among males and females.

Women presented with lesions around the waist commonly. Males presented with lesions at different sites like over dorsum of legs and fore arm most commonly. Most of the cases were asymptomatic followed by painless lesions, ulcerations and painful lesions [Figure 2]. Out of 40 cutaneous calcifications, 14 (35%) were Asymptomatic, 12 (30%) were painless papules /nodules, 8 (20%) were ulceration with or without discharge, 6 (15%) were painful papules/nodules.

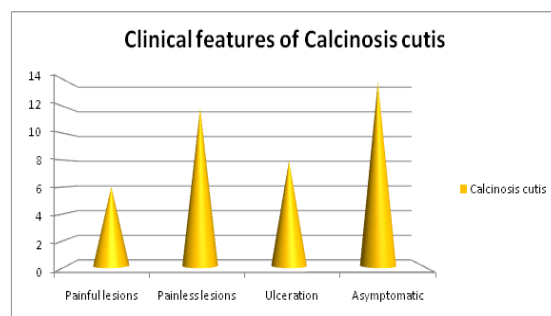


Figure 2: Clinical features of Calcinosis cutis.

On histological examination, 28 (70%) were Calcinosis cutis, the predominant one followed by 10 (25%) were calcified sebaceous cysts and other adnexal tumors and only 2 (5%) were scrotal calcinosis [Table 2, Figure 3].

Table 2: Incidence of Histopathological lesions.

Histopathological lesions	No. of patients	Percentage
Calcinosis cutis	28	70%
Calcified sebaceous cysts and other adnexal tumors	10	25%
Scrotal calcinosis	02	5%
Total	40	100%



Figure 3: Gross picture of Scrotal calcinosis.

On Histological examination, massive inflammatory cell collections and calcium deposits are seen in the dermis. Low power and High power microscopic pictures are shown in [Figure 4 & 5] respectively.

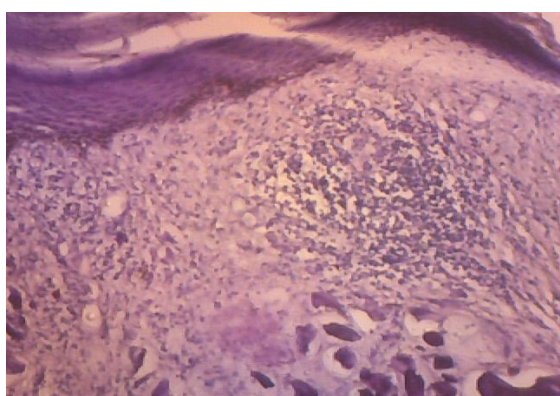


Figure 4: Showing calcifications and inflammatory cell collections in Dermis - 10X.

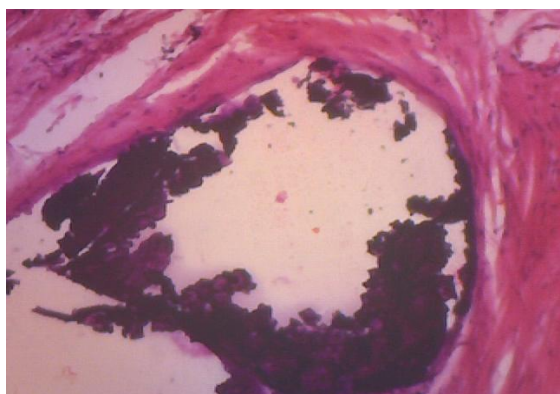


Figure 5: Showing calcifications and inflammatory cell collections in Dermis - 10X.

DISCUSSION

Calcinosis cutis is a rare disorder resulted due to various reasons. Treatment of calcinosis cutis is limited and variable. Diagnosing the underlying disease and treating it is important, to reduce the calcinosis cutis.^[4,8]

The pathogenesis of calcinosis cutis is by many mechanisms. Metabolic and physical factors are important in the development of most cases of calcinosis. Usually Insoluble calcium compounds are

deposited within the skin due to local systemic factors. Hydroxy appetite crystals are of amorphous calcium phosphate, which are deposited.

Ectopic calcification can occur when there is hypercalcemia or hyperphosphatemia, when calcium, phosphorus products exceeds 70 mg2/dl2. Without preceding tissue damage, increased extracellular calcium may increase intracellular calcium, which may lead to calcium phosphate nucleation and crystalline precipitation.

When there is tissue damage it may allow influx of calcium ions leading to an increased intracellular calcium and subsequent crystalline precipitation tissue damage denatures the proteins that binds phosphate ions, leading to precipitation of calcium phosphate. Inflammation and rupture of epidermoid cysts is the patho-genetic mechanism of the disease.^[9-11]

Out of 40 patients of calcinosis cutis, most of them were females. 24 (60%) were females, predominant when compared to males as per this study. As such, there is no sex predilection documented.

In the present study, out of 40 cutaneous calcifications, 14 (35%) were Asymptomatic, 12 (30%) were painless papules/nodules, 8 (20%) were ulceration with or without discharge, 6 (15%) were painful papules/nodules.

Women presented with lesions around the waist commonly. Males presented with lesions at different sites like over dorsum of legs and fore arm most commonly as per this study. Most of the women presented with painless swelling over waist, all of them are from rural backgrounds with the habit of tying the saree around the waist very tightly. This case some amount of physical injury to the skin, which may precipitate dystrophic calcification.

In this study, On histological examination, 28 (70%) were Calcinosis cutis, the predominant one followed by 10 (25%) were calcified sebaceous cysts and other adnexal tumors and only 2 (5%) were scrotal calcinosis.

Prakash HM et al^[12] documented that Scrotal calcinosis, in the absence of systemic metabolic disorder presents as multiple, painless, hard nodules, which is a rare disorder. Prakash HM et al ^[12] also reported tumor calcinosis and sub-epidermal calcified nodules, where both are idiopathic type of calcinosis. Sub-epidermal calcified nodules are mostly asymptomatic, occurs mostly on face and ears of children.^[6,13-15]

Calciophylaxis is a life threatening condition, in which there is progressive calcification of small and medium sized vessels of the subcutis, often accompanied by necrosis. It is seen in hyperparathyroidism associated with chronic renal failure, but can also occur in absence of CRF ^[16]. It's often associated with elevated serum calcium/phosphate products. Histologically, Calciophylaxis shows deposits in subcutis, chiefly within the walls of small and medium sized vessels. These are

associated with endovascular fibrosis, thrombosis and global calcific obliterations.

Investigations has to be done to diagnose calcinosis cutis and also to rule out the any underlying pathologies. As treatment gives limited benefits, many medical treatments has been trying for cutaneous calcifications. Various treatment options like intra-lesional corticosteroids, probenecid, colchicine, magnesium or aluminum antacids, sodium etidronate, Myo-inositol hexophosphate^[17,18] has been beneficial in few individuals.

CONCLUSION

From this prospective study, we conclude that cutaneous calcifications are most common in middle age group and females. Among women most of the skin lesions were along the waistline, most were dystrophic calcifications. Women should know the problems arising like this because of habit of tying of saree very tightly. Asymptomatic and Painless skin lesions were the most common presentation. As the Cutaneous calcifications were mostly asymptomatic or painless, need to evaluate the carefully and treat if there is any underlying pathologies. Calcinosis cutis individuals should be educates and counsel regarding underlying pathologies and treatment.

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