International Journal of Research in Medical Sciences
Chandran VA et al. Int J Res Med Sci. 2023 Nov;11(11):4176-4178
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012

DOI: https://dx.doi.org/10.18203/2320-6012.ijrms20233395

Case Series

Histopathologic features of calcinosis cutis: a case series

V. Anish Chandran, Sudha Sharma*, Rajni Kaushik

Department of Pathology, Dr. YSPGMC, Nahan, H.P, India

Received: 11 August 2023
Revised: 08 September 2023
Accepted: 03 October 2023

***Correspondence:**
Dr. Sudha Sharma,
E-mail: dr.sudhasharma28@gmail.com

ABSTRACT

Calcinosis cutis is a rare condition characterized by the abnormal deposition of calcium salts in the skin and subcutaneous tissues. It usually occurs as an isolated entity, but is also associated with various systemic disorders. We had reported 8 cases in our department in the past one year. A striking finding was that all of them had clinical symptoms of at least 6 months and had normal serum calcium levels. The gross evaluation of the specimen showed areas of calcification which pointed out towards the diagnosis to be consistent with calcinosis cutis. The various histologic findings were presence of basophilic acellular material corresponding to calcification, eosinophilic hyalinization, foreign body giant cell reaction and an Inflammatory infiltrate. All the biopsies had conclusive evidence of the first finding. It is evident that all the cases encompass a variety of morphological findings and aim to convey a clear histopathological understanding of the lesion for a prompt diagnosis.

Keywords: Calcinosis cutis, Calcification, Basophilic acellular material

INTRODUCTION

Calcinosis cutis can be defined as an abnormal deposition of calcium salts in the skin and subcutaneous tissues, leading to the formation of firm nodules or plaques. It usually occurs as an isolated entity, but is also associated with various systemic disorders, including autoimmune diseases, connective tissue disorders, and metabolic abnormalities.[1,2]

This case series provides a comprehensive overview of calcinosis cutis by presenting a collection of clinical cases, highlighting the histopathological features which points towards a precise diagnosis of the lesion.

This study aims to enhance the understanding of the various morphological findings of this complex dermatological condition and provide clinicians with valuable insights into its diagnosis and management. It is hoped that this case series will contribute to the existing literature and promote further research in the field, leading to improved clinical outcomes for patients with calcinosis cutis.

CASE SERIES

We present a total of 9 cases of calcinosis cutis reported in our department. All the cases were excision biopsies and we had information on the age, sex, clinical presentation and serum calcium levels at the time of specimen submission.

The mean age of the patient was 50 years and there was no sex predilection. The more commonly involved sites were the thigh and scrotum. The mean duration of the progression of lesion was 1 year. There was no association with pain. The serum calcium levels of all the patients were within normal limits. None of the patients had any established co-morbidities. An excision biopsy was performed for all the cases and sent to the department of Pathology. All the specimen were subjected to a gross and microscopic examination.

Table 1: Clinical, biochemical and morphological findings.

Variables	N	Percentage (%)
Age (in years)		
21-40	2	25
41-60	4	50
61-80	2	25
Site		
Scrotum	2	25
Back	1	12.5
Thigh	2	25
Scalp	1	12.5
Gluteal region	1	12.5
Ankle	1	12.5
Duration of symptoms		
Less than 1 year	6	75
More than 1 year	2	25
Serum calcium levels		
Normal	8	100
High	0	0
Gross findings		
Skin covered biopsy	5	62.5
Calcified areas	8	100
Microscopic findings		
Basophilic acellular material	8	100
Eosinophilic hyalinization	3	37.5
Foreign body giant cell reaction	7	87.5
Inflammatory infiltrate	1	12.5

Majority of the specimen were skin covered and cut section of all of them revealed calcified areas. Areas of inflammation, ulceration or necrosis were not observed in any of the cases.

Various microscopic findings were observed. Areas with basophilic acellular material corresponding to calcification was seen in all of the biopsies. Three cases showed eosinophilic hyalinization whereas almost of the cases revealed a foreign body giant cell reaction. A focus of inflammatory cell infiltration was seen in one of the cases.

All the patients were kept on follow up post the surgery and none of them have developed any recurrence or complications till date.

DISCUSSION

Calcinosis cutis is a condition exhibiting an abnormal deposition of calcium salts in the skin and subcutaneous tissues, subsequently leading to formation of firm nodules or plaques. It has been reported in both paediatric and adult populations, with varying proportions between males and females. The aetiology of this lesion is multifactorial and can be categorized into different subtypes.[1]

Dystrophic calcinosis is a subtype which occurs when calcium deposits form in previously damaged or inflamed tissues and is commonly seen in individuals with autoimmune diseases such as systemic sclerosis, dermatomyositis, and systemic lupus erythematosus. Metastatic calcinosis cutis results from abnormal calcium metabolism and deposition in the skin and soft tissues and is often associated with disorders such as hyperparathyroidism, renal failure, and excessive vitamin D or calcium intake. Idiopathic calcinosis cutis refers to cases where the underlying cause is unknown. It may occur as an isolated entity or in association with certain genetic syndromes. Iatrogenic calcinosis cutis occurs as a result of medical interventions, such as long-term calcium or phosphate administration, intravenous drug use, or tissue trauma.[2]

Calcinosis cutis presents with various clinical findings depending on the subtype and underlying aetiology. It typically manifests as palpable nodules or plaques in the skin or subcutaneous tissue which may vary in size, shape, and distribution. These nodules or plaques are firm on palpation and often show a localized or diffuse skin discoloration, ranging from bluish-purple to brownish-yellow. Larger lesions can cause pain, tenderness and restriction of movement, especially when located over the joints. In advanced cases, the overlying skin may become ulcerated which could possibly lead to a secondary bacterial or fungal infection.[3]

Radiological investigations like X ray, ultrasonography and CT scan can be helpful in the evaluation of calcinosis cutis, especially for assessing the extent and distribution of calcifications.[4] Biochemical investigations can help in the evaluation of calcinosis cutis by assessing underlying metabolic abnormalities or associated conditions. Serum calcium and phosphate help identify abnormalities in mineral metabolism, parathyroid hormone (PTH) Levels can help assess parathyroid function and identify disorders such as primary hyperparathyroidism. Measurement of serum vitamin D levels can be useful in evaluating vitamin D metabolism disorders, as both vitamin D deficiency and excess can be associated with calcinosis. Serum creatinine and blood urea nitrogen (BUN) levels, can identify renal impairment which is a known risk factor for calcinosis cutis.[5]

Fine-needle aspiration cytology (FNAC) is a simple procedure which could be used to diagnose the lesion and avoid surgical intervention.[6]

The mainstay of management is to treat the underlying cause. Surgical excision may be considered in cases of calcinosis cutis when conservative measures fail or when there is a significant functional impairment or risk of complications.[7]

Gross findings of a specimen of calcinosis cutis can provide clues for diagnosis. The excised tissue may contain white or chalky deposits, representing the

calcium salts that have accumulated in the affected area. Calcified nodules or plaques having a hard consistency may be observed within the excised tissue, ranging in varying size and shape. Areas of inflammation, ulceration and necrosis may also be observed.[8]

Microscopic sections reveal deposits of calcium in the dermis or subcutaneous tissue. These calcium deposits can appear as amorphous basophilic material on routine staining. They may be surrounded by fibrous tissue or inflammation, depending on the underlying aetiology. In some cases, the calcium deposits can be associated with dystrophic calcification, characterized by the presence of necrotic or damaged tissue. The presence of foreign-body giant cells, which are multinucleated cells formed in response to the calcium deposits, is a common histopathological feature. Other findings can include dermal fibrosis, vascular changes, and chronic inflammation, depending on the specific subtype of calcinosis cutis and associated underlying conditions.[9,10]

CONCLUSION

In conclusion, this case series provides a comprehensive overview of calcinosis cutis, with key emphasis on the clinical findings and various gross and microscopic findings which would help in the diagnosis.

While further research is needed to establish evidence-based guidelines for calcinosis cutis diagnosis, this case series contributes to the existing knowledge and understanding of the condition. It is hoped that the findings presented here will inform clinical practice, stimulate further research, and ultimately improve patient outcomes in individuals affected by calcinosis cutis.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Cuong L, Bedocs PM. Calcinosis cutis. Treasure Island (FL): StatPearls Publishing; 2023.
2. Jiménez-Gallo D, Ossorio-García L, Linares-Barrios M. Calcinosis cutis and calciphylaxis. Actas Dermo-Sifiliográficas (English Edition). 2015;106(10):785-94.
3. Bhat D, Parate S, Bobhate SK. Scrotal calcinosis presenting as nodular masses: A report of 4 cases. Indian J Dermatol. 2003;48(2):112.
4. Yadav P, Thind SS. Imaging features in calcinosis circumscripta, a rare type of subcutaneous calcification in localized scleroderma. Med J Dr. DY Patil University. 2013;6(4):444-6.
5. Reiter N, El-Shabrawi L, Leinweber B, Berghold A, Aberer E. Calcinosis cutis: part I. Diagnostic pathway. J Am Acad Dermatol. 2011;65(1):1-12.
6. Binayke R, Taksande RV. Cytodiagnosis of idiopathic calcinosis cutis-a rare diagnosis in three cases with review of literature. Int J Health Sci Res. 2017;7:1-6.
7. Reiter N, El-Shabrawi L, Leinweber B, Berghold A, Aberer E. Calcinosis cutis: part II. Treatment options. J Am Acad Dermatol. 2011;65(1):15-22.
8. Sahoo N, Sethy M, Mishra P, Patra S, Purkait S, Giri SK. Idiopathic scrotal calcinosis diagnosed by fine needle aspiration cytology-report of a rare case. Diagnostic Cytopathol. 2017;45(10):922-4.
9. Toprak T, Sekerci CA. Case reports of benign intrascrotal tumors: Two epidermoid cysts and one scrotal calcinosis. Archivio Italiano di Urologia e Andrologia. 2020;92(1):64-6.
10. Kankaya D, Şenel E, Dölek Y, Uslu A, Sertçelik A. Idiopathic scrotal calcinosis: the incorrect terminology of scrotal calcinosis. Giornale Italiano di Dermatologia e Venereologia: Organo Ufficiale. Societa Italiana di Dermatologia e Sifilografia. 2015;150(5):495-9.

Cite this article as: Chandran VA, Sharma S, Kaushik R. Histopathologic features of calcinosis cutis: a case series. Int J Res Med Sci 2023;11:4176-8.