ORIGINAL RESEARCH PAPER

Dermatology

ACNE KELOIDALIS NUCHAE AND ITS RELATION TO MARKERS OF METABOLIC SYNDROME

KEY WORDS: Acne keloidalis nuchae,metabolic syndrome

Dr. Krishna Bhalala Gujarat Adani Institute Of Medical Sciences, Bhuj

Dr. Dhara Zankat* Gujarat Adani Institute Of Medical Sciences, Bhuj *Corresponding Author

Dr. Anugrah Parikh Gujarat Adani Institute Of Medical Sciences, Bhuj

Dr. Kinjal Patel Gujarat Adani Institute Of Medical Sciences, Bhuj

ABSTRACT

BACKGROUND: Acne keloidalis nuchae (AKN) is a chronic scarring folliculitis which usually occurs in young adult males. Studies have suggested that AKN may be associated with general medical disorders particularly metabolic syndrome.

AIM: To study the metabolic syndrome markers in patients of acne keloidalis nuchae.

METHOD: The study was a prospective, descriptive and analytical study conducted at the Dermatology Outpatient Department of the Gujarat Adani Institute of Medical Sciences, Bhuj. Data were obtained from the medical records of patients diagnosed with AKN over a one year period (2017–2018).

RESULTS: We describe a case series of 24 Indian patients with AKN. Known risk factors for AKN like as curly hair or wearing of a helmet were not present in these patients. All patients were male and age was between 20 to 40 years. Out of twenty four patients, 10 patients (41.06%) were found to be normal, 14 patients (58.33%) were obese. 9 (37.50%) patients had type 2 hypertension (140-159mmHg) and 7(29.16%) had hyperlipidemia.(S.TG >150mg/dl, HDL<40mg/dl). 10(41.66%) patient had elevated fasting glucose(>100 mg/dl).Out of these 10 patients six were diagnosed 1st time during investigation.

CONCLUSION: AKN is considered a cutaneous marker for the metabolic syndrome but further studies by dermatologists will be necessary to confirm this clinical observation.

INTRODUCTION

AKN is characterized by follicular-based papules and pustules that form hypertrophic or keloid-like scars in adolescent age group most commonly over occipital area and sometimes extending over nape of neck.[1] It is somewhat of a misnomer as lesions are not caused by acne vulgaris nor they are keloid like in histopathology- it is rather a Folliculitis.[2] The condition has a predilection for men, occurring 20 times more frequently than in women [3], and starts after adolescence. While the exact underlying pathogenesis of AKN is not known, the two predominant theories suggest skin injury and the existence of aberrant immune reactions as the underlying causes. Skin injuries from irritation, occlusion, trauma, friction and hair cutting practices have all been implicated as risk factors for the development of AKN.[4,5,6,7] The characteristic curvature of afro-textured hair has also been implicated in inciting AKN, but no clinical or pathologic evidence exists to substantiate this.[8]

PATHOPHYSIOLOGY: [8]

The repeated friction, trauma, and infection of the skin overlying the nape of the neck leads to acne keloidalis nuchae. Herzberg et al.[8] proposed a series of ultrastructural events that are responsible for the formation of acne keloidalis nuchae:

(1) Acute perifollicular inflammation followed by a weake ni ng of the follicular wall at the level of the lower infundi bu lum, the isthmus, or both.
(2) Formation of acute and chronic granulomatous inflammation by the release of naked hair shaft which acts as a foreign body.
(3) The fibroblasts will produce new collagen and fibrosis.
(4) Distortion and occlusion of the follicular lumen by the fibrosis results in retention of the hair shaft in the follicle.

AIM AND OBJECTIVES:

To study the metabolic syndrome markers in patients of acne keloidalis nuchae and determine the most significant predictor (highest relative risk) of development of AKN. To find out other co-existing dermatological disorders such as Acanthosis Nigricans.

INCLUSION CRITERIA:

All patients presenting to the outpatient department of dermatology with clinical features of AKN (erythematous papules and pustules that form hypertrophic or keloid-like scars over occipital area and nape of neck) and who gave consent were included in this study.

EXCLUSION CRITERIA:

Patient who did not give consent to take part in study.

MATERIALS AND METHOD:

This was a prospective study conducted in the outpatient department of dermatology. The study was conducted over a period of 2 years (2017 to 2019). All the authors contributed equally to the recruitment of cases and generation of data. Twenty four patients with a clinical diagnosis of AKN who gave consent were included in study.

The participants were subjected to thorough history taking and clinical examination. Age, sex, age of onset of AKN, presence of other skin diseases, diabetes, hypertension, dyslipidemia, history of drug intake, duration of disease, blood pressure, waist circumference were recorded.

Cutaneous examination was done and the lesions of AKN were described in terms of color, type of lesions and site involved. In addition, the presence of acanthosis nigricans was also documented.

Skin biopsy for histopathological examination taken when clinical diagnosis was difficult.

Each patient was subjected to fasting blood sugar and >100 mg /dl was considered as hyperglycemia.

Blood pressure was measured and 130/85 was considered as the normal level. If any of these levels were higher, the patient was labeled as hypertensive.

Waist circumference (WC) was measured using a nonstret chable flexible tape in horizontal position, just above the iliac crest, at the end of normal expiration, in the fasting state, with the subject standing erect and looking straight forward and observer sitting in front of the subject. As per the NCEP ATP 3 criteria obesity was labelled when waist circumference was >40 inches in male and >36 inches in female.

Lipid profile was measured and a level of triglycerides ≥150 mg/dl and high density lipoprotein (HDL) <40 mg/dl in males and <50 mg/dl in females was labeled as hyperlipidemia.

All above parameters are according to NCEP ATP III CRITERIA (table 1).

Table 1: NCEP ATP III (2005 revision) criteria

	NCEP ATP III (2005 revision)
Absolutely required	**None**
Criteria	**Any three of five below**
(1) Obesity	Waist circumference>40 inches in male and >36 inches in female
(2) Hyperglycemia	Fasting glucose >100 mg/dl or Rx
(3) Dyslipidemia	TG >150 mg/dl or Rx
(4) Dyslipidemia (second,separate criteria)	HDL cholesterol <40 mg/dl in male or <50 mg/dl in female or Rx
(5)Hypertension	>130 mmHg systolic or >85 mmHg diastolic or Rx

RESULTS:

- Twenty four patients were found to have AKN, over a period of 2 years study duration.
- All the patients were male (100%) (24/24).
- The mean age group was 28 years of age.
- All the patients are Indian in origin.
- All the patients have lesions on occipital area of the scalp with 16.6% also having lesions extending on nape of neck. All 4 patients with lesions extending upto neck shows features of metabolic syndrome.
- 50% patients have a history of aggravation after close shaving of hair during hair cut (once a month) over the occiput area.
- None of them had presence of hair shaft disorder (eg:curly hair, wooly hair) or history of wearing helmets, cervical collar shirt and head bands.
- According to waist circumference, 14 patients(58.33%) were obese.
- Diabetes was diagnosed in 10 (41.6%) patients according to NCEP ATP III criteria.
- Hyperlipidemia and hypertension were diagnosed in 7 (29.16%) and 9(37.50%)patients.
- Metabolic syndrome was present in 10 (41.6%) patients as per NCEP ATP-III CRITERIA (any three of obesity, hyperglycemia, hypertension and dyslipidemia).
- Out of 24 patients, 6 (24%) patients had clinical lesions similar to Acanthosis Nigricans over the nape of neck.

DISCUSSION

AN is clinically manifested as erythematous papules and/or pustules commonly over occipital region and sometimes extend upto neck region which can lead to hypertrophic scaring, keloid formation and alopecia. The pathogenesis of AKN is not completely understood, though trauma and/or immune reactions are thought to play a role.

In our study, all 24 patients were male. Study done by Ogunbiyi et al and Dinehart SM et al shows that it is predominantly a disorder of males with a male to female ratio of 20:1.[9,10]

In our study, 50% patients gave a history of aggravation after close shaving of hair during hair cut (once a month) over the occiput area which is one of the risk factor for AKN.[4-7] There was absence of hair shaft disorder (eg:curly hair, wooly hair) in our study which has also been implicated in inciting AKN. [8]

All the patients had lesions on occipital area of the scalp with 16.6% also having lesions extending on nape of neck and associated with metabolic syndrome. Study done by Althea DC shows that Chronic scalp folliculitis (P = 0.001) and the presence of any component disease of the metabolic syndrome (OR = 14, P = 0.008) and specifically hypertension (OR = 6.75, P = 0.036) were significantly associated with the extension of the lesions beyond the nape and occipital scalp.[11]

Systemic comorbidities such as obesity was present in 58. 33%, hyperglycemia and metabolic syndrome were present in 10(41.6%) patients; hyperlipidemia in 7 (29.16%) pati ents and hypertension in 9(37.5%). Study done by kiyog Na shows that about 30% of patients had diabetes mellitus or metabolic syndrome. [12]

Consistent with the definition of metabolic syndrome provided by NCEP ATP 3 CRITERIA, increased waist circumference, hyperglycemia, hypertension, and dyslipidemia were significantly higher in the patients with AKN.

CONCLUSION

Male patients, those with increased fasting glucose level, triglyceride, blood pressure, increased waist circumference and BMI have a significantly higher probability of developing AKN. Further studies should be done to validate this finding. Thus, a patient of AKN should be thoroughly evaluated for underlying systemic illness, even if there are no signs and symptoms of cardiovascular disease and metabolic syndrome.

DECLARATION OF PATIENT CONSENT

The authors certify that they have obtained patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

FINANCIAL SUPPORT AND SPONSORSHIP

Institutional.

CONFLICTS OF INTEREST

There are no conflicts of interest

REFERENCES

1. Dinehart SM, Herzberg AJ, Kerns BJ, Pollack SV. Acne keloidalis: a review. J Dermatol Surg Oncol. 1989 Jun. 15(6):642-7.
2. Gloster HM Jr. The surgical management of extensive cases of AKN. Arch Dermatol. 2000 Nov. 136(11):1376-9.
3. Kelly AP. Pseudofolliculitis barbae and acne keloidalis nuchae. Dermatol Clin. 2003;21(4):645–53.
4. Dinehart SM, Herzberg AJ, Kerns BJ, Pollack SV. Acne keloidalis: a review. J Dermatol Surg Oncol. 1989;15(6):642–7.
5. Halder RM. Hair and scalp disorders in blacks. Cutis. 1983;32(4):378–80.
6. Kenney JAJ. Dermatoses: common in blacks. Postgrad Med. 1977;61(6):122–7.
7. Smith JD, Odom RB. Pseudofolliculitis capitis. Arch Dermatol. 1977; 113 (3):328–9.
8. Herzberg AJ, Dinehart SM, Kerns BJ, Pollack SV. Acne keloidalis. Transverse microscopy, immunohistochemistry, and electron microscopy. Am J Dermatopathol. 1990;12(2):109–21.
9. Ogunbiyi AO, George AO. Acne keloidalis in females; case report and review of literature. JNMA. 2005;97:736–738.

10. Dinehart SM, Tanner L, Mallory SB, Herzberg AJ. Acne keloidalis in women. Cutis. 1989;44:250–252.
11. Althea DC, kaderina stylianou. Acne keloidalis nuchae: risk factors and associated disorders – a retrospective study. Int. J of Dermatolo gy .2017; 56: 828-32.
12. Na K, Oh SH, Kim SK. Acne keloidalis nuchae in Asian: A single institutional experience. PLoS One. 2017;12(12):e0189790.