

## Angiokeratoma of the Scrotum: A Dermatologic Clue for Impaired Fertility

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### Abstract

**Background:** Angiokeratoma of the Scrotum (AKS) is thought to be associated or aggravated with varicocele. The underlying pathogenesis is thought to be due to atrophy of Dartos muscle and degeneration of elastic tissue incidental to aging which results in loss of the support of the blood vessels.

**Aim of the work:** To investigate the relation of (AKS) with underlying varicocele and probable associated male subfertility.

**Subjects and method:** The present study, included 11 male patients with AKS all patients were subjected to scrotal duplex ultrasonography to evaluate underlying varicocele and semen analysis to detect probable subfertility.

**Results:** The current study included eleven adolescent males aged 27 to 46 years old with AKS. Clinical assessment revealed that nine patients (82%) had varicocele while 2 patients (18%) were clinically free. The duplex ultrasonographic findings of the studied patients proved that clinically free patients (n:2) did not full-fill CDCCDU criteria for diagnosis of varicocele. The mean sperm concentration for the studied patients was  $19 \times 10^6/\text{ml}$  ranged from 2-35 millions/ml, progressive motility was 23.2% ranged from 5-50% and mean abnormal forms was 52.7% and the range was range 30-90.

**Conclusion:** AKS is commonly associated with varicocele and impaired semen parameters and provides a clue on subfertility potential.

**Keywords:** Angiokeratoma of scrotum; Varicocele; Subfertility

### Introduction

The term angiokeratoma is applied to a number of quite distinct conditions that share a clinical presentation with asymptomatic hyperkeratotic vascular skin lesions and a histological combination of superficial dermal vascular ectasia and hyperkeratosis, angiokeratoma of the scrotum is the most common type among angiokeratomas [1-3].

1896, Fordyce introduced the term angiokeratoma of scrotum later. The term 'angiokeratoma' is derived from three Greek words meaning vessels, horn and tumour respectively, although it is not a tumour in its true sense [4].

Prevalence of angiokeratoma is unknown, as the lesions often unnoticed, due to lack of association with systemic effects. However, the proposed prevalence is thought to be from 0.6% between the ages of 16-20 years, to 16.6% in the 70s. The lesions are most common in Caucasian and Japanese populations [5].

The propose cause of AKF might be a pathological alteration either in the walls of blood vessels their support. Imperial and Helwig consider the pathogenesis of AKF due to injury the capillaries e.g. trauma and chronic irritation. It is also believed that atrophy of dartos muscle and degeneration of elastic tissue incidental to senility also plays a role in loss of support of blood vessels. Associated increased pressure of varicocele may play a role in aggravating the condition. Further with injury to the wall of papillary capillary, there is dilatation and impaired contractibility of their wall. Later on, secondary fragmentation of the elastic tissue by overdistension occurs, causing damage and vascular dilatation [2].

Varicocele has been implicated as a common cause due to increased venous pressure; however, data is controversial [4-6]. Angiokeratoma of the scrotum manifest as 1-6 mm red-blue, hyperkeratotic papules, occurring in isolation or groups, on the skin of the scrotum and shaft of

penis. Identical lesions may also occur on the glans or shaft of the penis, or even on the upper thighs and in the groins. Well circumscribed, macular, telangiectatic lesions have been described on the oral mucosa in patients with angiokeratomas of the scrotum. Patients may complain of itching, soreness or bleeding [7-9].

Varicocele is the condition of abnormal venous dilatation of the pampiniform venous system presented at the upper pole of the testicle, sometimes associated with intratesticular varices. Varicocele is estimated to affect 10-15% of men. It commonly presented on the left side. There is evidence that varicocele reduces male fertility [10]. However, the relation of varicocele to AKS is a matter of debate [4-6].

In this study we demonstrate the relation between AKS and varicocele as well as its relation to fertility.

### Patients and Method

Eleven AKS patients were included in the present study, which was carried out within the period from Jan, 2010 to Jun 2011. All the patients were recruited from the Department of dermatology, venereology and Andrology outpatient clinic, Al-Azhar the patients clinically

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diagnosed by the presence of the typical lesion of AKS (Figure 1). There participation in the study was approved by their informed consent. All the studied patients were subjected to thorough history taking both present and past with emphasis on fertility status. General clinical examination of the abdomen was done to exclude intra abdominal masses and hernias. Scrotal examination was done to diagnose the presence of varicocele: grade III varicocele, which is, visible. Grade II varicocele, is detected on palpation, but with no need for a Valsalva's maneuver (maximal abdominal strain against a closed epiglottis just after a deep inspiration) and grade I varicocele is detected on palpation with the Valsalva maneuver only [11].

The patients were subjected to scrotal duplex ultrasonography using (Esaote Ultrasound AU5) with linear 10 MHz probe to evaluate the presence of testicular varicocele according to Classic diagnostic criteria using color duplex ultrasound (CDCCDU): Diameter of the largest vein with Valsalva >2 mm. Duration of reflux more than 1 second [12] (Figure 2).The patients were subjected to Conventional semen analysis, according to the WHO criteria, 1999 [13]. Patient's data were collected and studied to detect the relationship between AKS, varicocele and suspected altered semen parameters.

## Results

The current study included eleven adolescent males aged 27 to 46 years old (n=11), with mean age 36.7 years. Among the studied group 55% of patients complained of spontaneous bleeding lesions (n=6), 18% complained from disfiguring lesions (n=2), 18% discovered during routine examination for infertility (n=2), while, 9% complained of scrotal itching (n=1). Clinical assessment revealed that nine patients (82%) had varicocele while 2 patients (18%) were clinically free. Among the clinically diagnosed varicocele patients (n=9), 7 had bilateral while 2 had unilateral left varicocele. The sonographic findings of the

Patient	Largest Vein Diameter/mm-Rt	Reflux time/ sec-RT	Largest Vein Diameter/mm-Lt	Reflux time/ sec-Lt
1	1	0	1.2	0
2	3.1	1.7	3.5	1.3
3	1.2	0	1.5	0
4	2	0	2.3	1.2
5	1.9	0	2.3	1.7
6	1	0	2	2.2
7	2	0	2	1.7
8	2.8	0	2.1	1.4
9	2	0	2.9	1.9
10	2	0	2.8	2
11	1.2	0	2.1	0
mean	1.83		2.24	

Table 1: shows the Duplex ultrasonographic characters of the studied group.

Patient	Sperm Cont 10 <sup>6</sup> /ml	Grade A Motility%	Grade B Motility%	Abnormal forms%
1	22	30	20	50
2	30	0	15	30
3	20	20	30	70
4	35	0	5	90
5	17	0	5	90
6	10	0	20	40
7	10.5	5	5	30
8	20	20	20	30
9	18	0	30	40
10	24	10	10	60
11	2	0	10	50
mean	18.95	7.72	15.45	52.72

Table 2: shows the semen parameters among the study group.

studied patients proved that clinically free patients (n:2) did not full-fill CDCCDU criteria for diagnosis of varicocele (Largest vein diameter ranged from 1-1.5 mm, with no reflux) (Table1).

Eleven ejaculates were collected, and evaluated according to WHO, 1999 and showed that the mean sperm concentration was  $19 \times 10^6$ /ml ranged from 2-35 millions/ml, progressive motility was 23.2% ranged from 5-50% and mean abnormal forms was 52.7% and the range was range 30-90 [13].

Five patients were oligozoospermic ( $<20 \times 10^6$ /ml with mean sperm concentration  $11.5 \times 10^6$ /ml ranged from (2-18). Nine patients showed a progressive motility (A+B) of less than 50%. Ten ejaculates presented rapid progressive motility (grade A) of less than 25%.

Nine semen analyses showed an asthenozoospermia ( $<50\%$  progressive motile sperm and/ or  $<25\%$  rapid progressive motile sperm) (Table 2).

## Discussion

At present, the cause of scrotal angiokeratomas is based on theories. One theory claims that lesions are due to varicocele [4].To our knowledge there is no larger scale study investigated association of AKS and varicocele few case reports only discussing this association. Orvieto et al. in 1994 as well as Trickett and Dowd, 2006 reported no association between AKS and varicocele the first research depended on random telephone questioning of young military recruits presenting with varicocele for the presence AKS this study lacking clinical examination [1,14].



Figure 1: Shows photographs of patient number 5 clinical appearance.



Figure 2: Duplex Ultrasonographic study(Largest vein diameter 2 mm with reflux time 1.7 sec) of patient number 5.

Trickett and Dowd reported single case presented by scrotal bleeding they excluded varicocele by clinical examination only and did not perform any further investigation e.g ultrasound or angiography to exclude subclinical varicocele [15]. The study reported by Agger and Osmundsen in 1970 [15] confirm the association of AKS and varicocele he dependent on clinical examination for varicocele and improvement of AKS following varicocelectomy. This relation was later confirmed by Erkek et al. depending on clinical examination only [4].

In the present study we found strong association between varicocele and AKS which is proved by ultrasonography and impaired semen parameters but the small scale study and the presence of 2 patients 18% presented by infertility is a major obstacle to prove this association.

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