

Case Report

Semen analysis in a 21 years old man ten years after scrotal lymphedema: a case report

Fernando Tadeu Andrade-Rocha ¹, Walter Dario Cardona Maya ^{2*}

¹ Lisa Andrology Lab, Petrópolis, RJ, Brazil.

² Grupo Reproducción, Facultad de Medicina, Universidad de Antioquia - UdeA, Medellín, Colombia.

* Correspondence: wdario.cardona@udea.edu.co.

Abstract: The semen analysis is the primary test to evaluate the fertile potential of a man, and after a scrotal lymphoedema, it is possible to have some associated reproductive alterations. This case report aims to present the semen analysis of a 21-year-old man ten years after scrotal lymphedema. The man presents azoospermia after suffering from lymphedema at an early age. Based on this case, and as a suggestion, all patients with scrotal lymphedema should be informed of any possible negative effect on the seminal quality and perhaps affectation of their fertility.

Keywords: Case report; Scrotal lymphoedema; Fertility; Gametogenesis; Semen analysis.

1. Introduction

Lymphedema is a chronic and progressive edematous common, complex and inexplicably underappreciated human disease [1]; it is characterized by abnormal lymph circulation, causes dysfunction in fluid balance, lipid metabolism and immune system, causing the accumulation of lymphatic fluid, which results in tissue swelling [2].

Lymphedema is classified into primary as a result of genetic or developmental abnormalities in the lymphatic system, and secondary caused insults to the lymphatic system as traumas, surgery, radiation, infection, tumour and venous diseases [3]. The most common causes are parasite infection in tropical regions and cancer treatment in developing countries. Antibiotics may be all that is necessary in cases of acute infection, but in most cases requiring surgery, the skin is involved and need to be removed. Swelling associated with lymphedema can occur anywhere in the body, including the arms, hands, legs, feet, chest, shoulder, pelvis, groin, genitals, and face/intraoral tissues.

Specifically, genital lymphedema is often associated with lower extremity disease and occurs when swelling from inadequate lymphatic drainage involves the male or female genitalia. Scrotal lymphedema is a disease caused by obstruction, aplasia or hypoplasia of the lymphatic vessels draining the scrotum; it is a functionally disabling and emotionally incapacitant entity. However, penile and scrotal lymphedema does not affect sexual function but could negatively affect seminal quality and fertility [4].

Therefore, this case report aims to present the semen analysis of a 21-years-old man ten years after scrotal lymphedema.

2. Case Report

A 21-years-old young man was attended at the Lisa Andrology Lab for semen analysis. During the anamnesis, he reported that he presented scrotal lymphedema when he was 13 years old. At that time, he had to undergo surgery and clinical treatment. The patient had no testicular pain after the treatment performed to the lymphedema. A recent consultation with the urologist did not detect testicular atrophy on physical examination.

Citation: Andrade-Rocha FT, Cardona Maya WD. Semen analysis in a 21 years old man ten years after scrotal lymphedema: a case report. Brazilian Journal of Case Reports. 2023 Jan-Mar;03(1):38-41.

Received: 21 November 2022

Accepted: 11 December 2022

Published: 12 December 2022



Copyright: This work is licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0).

He was referred for semen analysis to evaluate his fertility status due to lymphedema at an early age.

After four days of sexual abstinence, the semen sample was collected for the basic analysis following the recommendations of The World Health Organization (WHO) manual for semen analysis [5]. In addition, the complementary procedures were performed with technologies developed in our laboratory. Finally, in order to investigate azoospermia, centrifugation of semen was performed for concentrate spermatozoa and allow for an efficient microscopic examination.

The primary outcomes are shown in Table 1, whereas the microphotography illustrates the cellular content from the analyzed sample (Figure 1). Immature cells germ (ICG) and leucocytes can add valuable and clinically relevant information to the semen report, in the present case the alteration of spermatogenesis can be the consequence of scrotal lymphedema.

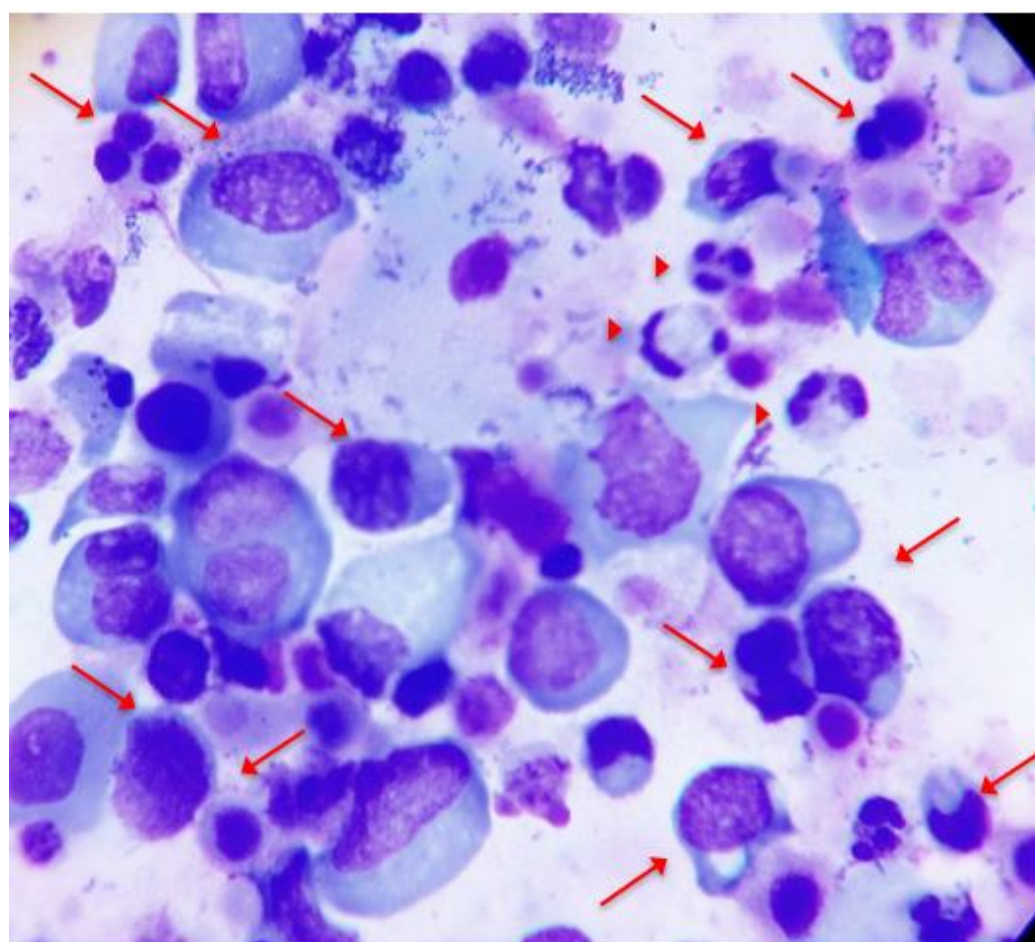


Figure 1. Immature germ cells (arrow) and leukocytes (arrowhead) in semen from a man with previous scrotal lymphedema.

3. Discussions

In the current case report, the outcomes of a young patient who had lymphedema at age 13, which was treated with surgery and clinical treatment, according to the patient's information, was described. At 21 years old, he decided to submit his first semen analysis to assess the damage and sequelae the lymphedema may have caused, especially to his fertility.

Table 1. Patient semen characteristics and reference limit.

Parameter	Results	Reference limits
Volume	2,8 mL	1,4 mL *
Viscosity	Normal	Normal
pH	7,9	7,2 *
Sperm count/mL	0	16 x 10 ⁶ /mL *
Immature germ cell/mL	3 082 000	1,5 x 10 ⁶ /mL #
Primary spermatocytes	1%	-
Round spermatids	96%	-
Elongated spermatids	3%	-
Leukocyte/mL	3 360 000	< 1,0 x 10 ⁶ /mL
Phagocytes/mL	119 000	< 100 x 10 ³ /mL #
Bacterial flora	Plentiful	-

* Low reference limits – percentile 5th (5). # Laboratory references (unpublished data).

It is evident that the damage was quite severe to the patient's fertility status, mainly because azoospermia was detected (Table 1, and Figure 1). Semen specimen concentration procedures for detecting residual sperm in vasectomized men or with severe oligozoospermia are usually performed to detect residual sperm at concentrations lower than 10 000/mL. However, nothing was detected in the current case report, even using this sample concentration process. Azoospermia was previously reported in one individual due to scrotal lymphedema, although with normal spermatogenesis according to testicular biopsy [6]. While in another report, the azoospermia is due to severe involvement of the testicles and the spermatic cord, and it is necessary to perform bilateral orchiectomy [7].

Surprisingly, in this case report, we observed a considerable number of ICG with a marked prevalence of round spermatids (83%) and some elongated spermatids (17%). Also, leukocytospermia and different bacterial morphotypes were identified. Previously, the differential count of round cells in 32 semen samples from patients with azoospermia showed that out of the total round cells: 70% were ICG and 30 were leucocytes [8]. Even, some studies use the presence ICG as markers of obstructive obstructive and non-obstructive azoospermia [8, 9]. However, none of these studies reported these findings in men with scrotal lymphedema.

The damage to spermatogenesis and the inflammatory response could be sequelae of the lymphedema that affected this patient at the age of 13 due to the patient showing active spermiogenesis but no final sperm production (late maturation arrest). Exfoliation of ICG in semen determines the state of integrity of the germinal epithelium [10].

4. Conclusions

Based on the information in this case report, it is essential that patients suffering from scrotal lymphedema be informed of any possible negative effect on the seminal quality and perhaps affectation of their fertility. In addition, if infertility is a concern, a semen analysis should be performed analysis after recovering from treatment to ensure at least the presence of sperm.

Funding: None.

Research Ethics Committee Approval: We declare that the patient approved the study by signing an informed consent form and the study followed the ethical guidelines established by the Declaration of Helsinki.

Acknowledgments: None.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. Rockson SG. Advances in Lymphedema. *Circ Res.* 2021;128(12):2003-16.
2. Yamamoto T, Yamamoto N. Lymphedema. *Approach to Lower Limb Oedema*: Springer; 2022. p. 295-310.
3. Warren AG, Brorson H, Borud LJ, Slavin SA. Lymphedema: a comprehensive review. *Ann Plast Surg.* 2007;59(4):464-72.
4. Greene AK. Epidemiology and morbidity of lymphedema. *Lymphedema*: Springer; 2015. p. 33-44.
5. World Health Organization. WHO Laboratory Manual for the Examination and Processing of Human Semen. 6th ed. WHO Press; Geneva, Switzerland. (accessed on 15 July 2022). 2021.
6. Vreeburg M, Heitink MV, Damstra RJ, Moog U, van Geel M, van Steensel MA. Lymphedema-distichiasis syndrome: a distinct type of primary lymphedema caused by mutations in the FOXC2 gene. *Int J Dermatol.* 2008;47 Suppl 1:52-5.
7. Kuepper D. Giant scrotal elephantiasis. *Urology.* 2005;65(2):389.
8. Gune AR, Patil AD, Gune RP, Patil RS. Correlation of Immature Germ Cells in Semen in Severe Oligospermic and Azoospermic Males. *International Journal of Scientific Research and Reviews.* 2019;8(2):2329-33.
9. Roy S, Banerjee A, Pandey HC, Singh G, Kumari GL. Application of seminal germ cell morphology and semen biochemistry in the diagnosis and management of azoospermic subjects. *Asian J Androl.* 2001;3(1):55-62.
10. Andrade-Rocha FT, Cardona-Maya WD. Increased exfoliation of immature germ cells detected in semen analysis routine and its clinical significance. *Arch Ital Urol Androl.* 2022;94(4).