



Middle East Fertility Society
Middle East Fertility Society Journal

www.mefsjournal.org
www.sciencedirect.com



ORIGINAL ARTICLE

The impact of chronic testicular inflammatory infiltration on spermatogenesis in azoospermic men, evidence-based pilot study



Ahmed M Hassanin ^{a,*}, Essam Ayad ^b

^a Department of Andrology, Faculty of Medicine, Cairo University, Cairo, Egypt

^b Department of Pathology, Faculty of Medicine, Cairo University, Cairo, Egypt

Received 29 May 2015; revised 10 July 2015; accepted 13 July 2015

Available online 12 August 2015

KEYWORDS

Spermatogenesis;
Lymphocytic inflammatory infiltration;
Testis;
Azoospermia

Abstract *Introduction:* The testes are immune privileged organs but they are subjected to acute and chronic inflammations that can impair spermatogenesis. Spermatogonial stem cells are less sensitive to injury, capable of self-renewal, and act as a reservoir that can restart impaired spermatogenesis. *Objective:* To study the association of chronic testicular inflammatory infiltration with an area of complete spermatogenesis in testicular biopsies of men with non-obstructive azoospermia (NOA). *Design:* Retrospective study. *Patients and methods:* Review of 109 archived Bouin fixed, paraffin embedded and hematoxylin and eosin stained open testicular biopsies of azoospermic men. *Main outcome measure:* The absence/presence (focal/widespread) of chronic interstitial inflammatory infiltration and absence/presence of late spermatids. *Results:* Obstructive picture was found in 25 (22.9%) whereas non-obstructive patterns were found in 84 (77.1%) of the reviewed biopsies. Focal interstitial lymphocytic infiltration (ILI) was found in 9 (36%) obstructive biopsies whereas in non-obstructive patterns 32 (38.1%) had focal and 27 (32.1%) had wide spread ILI. In NOA late spermatids were present in 32 (38.1%) biopsies. Finding late spermatids was significantly highest when the infiltrate was focal and significantly lowest when the infiltrate was wide spread. *Conclusion:* In NOA, the possibility of finding an area of complete focal spermatogenesis in the open testicular biopsy is significantly highest when there is a focal type of ILI, but the possibility

* Corresponding author at: Department of Andrology, Faculty of Medicine, Cairo University, 1 Al-Saray Street, Al-Manial, 11559 Cairo, Egypt. Tel.: +20 1129563345.
E-mail addresses: ahmed.hassanin@kasralainy.edu.eg, dr_hassanin@yahoo.com (A.M. Hassanin).

Peer review under responsibility of Middle East Fertility Society.



Production and hosting by Elsevier

is significantly lowest when the infiltrate is widespread. This may guide the clinical testicular sperm extraction (TESE) procedure.

© 2015 The Authors. Production and hosting by Elsevier B.V. on behalf of Middle East Fertility Society. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Spermatogenesis starts at puberty when the immune-tolerance is completed. The newly formed spermatogenic cells develop new antigens considered foreign for the own immune system. In the testes, modulation of the immune response protects the developing spermatogenic cells from self-destruction [1,2]. The modulation of the testicular immune response involves the formation of blood-testis barrier and presence of immunosuppressive factors secreted by macrophages, Sertoli, Leydig and peritubular cells [1–3]. In mice, disruption of the blood-testis barrier led to increased apoptosis, arrest of spermatogenesis, Sertoli cell only picture, aggregation of Sertoli cells in the apical compartment and infertility [4].

Modulation of the testicular immune response does not interfere with the development of an inflammatory reaction when an infectious agent attacks the testis or when pathology is induced, as experimental autoimmune orchitis [5]. The inflammatory response is marked by infiltration of the interstitial spaces with immune cells (such as macrophages, dendritic cells and T cells) and secretion of pro-inflammatory cytokines such as IL-6, TNF- α , IL-17 and IL-23 [1–3,6–8]. Previous published researches confirmed the infiltration of the testicular interstitial tissue with CD4 and CD8 lymphocytes during the acute and chronic inflammations [9]. Also it was confirmed that Th17 (CD4) cells are markedly involved in the chronic inflammation in testicular biopsies of men diagnosed as NOA [10].

Noguchi et al. [11] reported early regression of spermatogenesis and testicular atrophy in boars following epididymo-orchitis especially in genetically predisposed animals. Inflammation of testes has deleterious effects on spermatogenesis however the spermatogonial stem cells, less sensitive to injury, are capable of self-renewal and act as a reservoir for spermatogenesis [12–15].

Prediction of the presence of testicular sperms in NOA men is an important issue before TESE/ICSI procedure. FSH estimation is considered the best, non-invasive, predictor for sperm retrieval before TESE procedures [16] however FSH had a moderate predictive value [17]. Furthermore, with the situation of failed TESE, the clinician is in need for predictive factors before making a decision to repeat the TESE procedure. Using micro-TESE procedure Berookhim et al. [18], reported a sperm retrieval of 44.5% in patients with a previous histological diagnosis of Sertoli cell-only.

Hypothesis: Inflammatory conditions of testes have deleterious effects on spermatogenesis that can lead to non-obstructive azoospermia. However regeneration of foci of spermatogenesis is a possibility. This research aimed to study the association of chronic ILI with finding an area of complete spermatogenesis in testicular biopsies of azoospermic men.

2. Patients and methods

A waiver of getting consent was taken for this retrospective study, from the Ethics Committee, Andrology Department, Faculty of Medicine, Cairo University. During the period of February 13, 2015 till March 19, 2015 we reviewed 109 randomly selected archived Bouin fixed, paraffin embedded and hematoxylin and eosin stained open testicular biopsies of azoospermic men who attended the Andrology clinic of the university hospital. Each testicular biopsy was reviewed for the histopathological diagnosis [19], absence/presence (focal/widespread) of interstitial inflammatory infiltrate with meticulous search for the presence of late spermatids in biopsies diagnosed as NOA. Widespread infiltration meant pervasive infiltration of the tissue or most of it. Scattered foci of infiltration were considered focal infiltration. Multi-focal infiltrations affected more than 30–40% of the tissue was considered as widespread. Confounders were avoided by studying all the variables on the same testicular tissue.

2.1. Statistical analysis

Data were entered using the statistical package SPSS version 20 (SPSS Inc., Chicago, IL, USA). Data were summarized using numbers and percentages for the qualitative data. Comparisons between groups were done using Chi square test for the qualitative data. *P* value < 0.05 was set as statistically significant.

3. Results

In the studied biopsies, a histopathological diagnosis of obstructive azoospermia was found in 25 (22.9%) whereas 84 (77.1%) had histopathological diagnosis of NOA. Interstitial lymphocytic infiltrate (ILI) was found in 68 (62.4%) biopsies, focal in 41 (37.6%) and widespread in 27 (24.8%), whereas an inflammatory infiltrate was absent in 41 (37.6%) biopsies.

In obstructive azoospermia a focal type of ILI was found in 9 (36%) biopsies whereas 16 (64%) did not have infiltration. In NOA ILI was found in 59 (70.2%) biopsies whereas 25 (29.8%) did not have infiltration. In NOA, the numbers and percentages of different histopathological patterns, ILI (absent/focal/widespread) and late spermatids (absent/present) in each pattern are represented in Tables 1 and 2. Comparative study of the histopathological patterns demonstrated significant differences regarding both the detection of an area of complete spermatogenesis and the absence/presence (focal vs widespread) of ILI.

In cases of NOA, the total numbers and percentages of biopsies in which late spermatids (sperms) were absent/present and ILI absent/focal/widespread when spermatids were absent/present are represented in Table 3. Comparative study

Download English Version:

<https://daneshyari.com/en/article/3966068>

Download Persian Version:

<https://daneshyari.com/article/3966068>

[Daneshyari.com](https://daneshyari.com)