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Azoospermia – Clinical and Cytological Manifestations

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Several clinical factors for azoospermia exist. Records of semen analyses frequently contain the item "round cells" without further specification of the type of cells. **Material and Methods:** We investigated 1333 patients (average 24.81 ± 1.90 years old) with congenital (n=299), specific (n=226) and non-specific inflammatory (n=390), and vascular diseases (n=363) of male genital system and 129 (average 25.63 ± 2.15 years old) healthy men as a control group. The following methods were used: andrological anamnesis and status; spermatological analysis of the ejaculate and sperm morphology according to WHO (1996); cytological analysis of round cells using Papanicolaou staining technique; statistical significance was verified with Student's t-test and SPSS computer program. **Results:** Azoospermia was proved in 20.18% in all male genital pathology. Cytological analysis of type round sperm cells was determined the following "round cells" of spermatogenic origin: spermatides – 79%, spermatocyte – 7%. The "round cells" of non-spermatogenic origin were counted: monocyte – 2%, granulocyte – 1%, macrophage – 3%, abnormal form cells – 8%. **Conclusion:** A knowledge of clinical features and cytological sight of azoospermia open new horizons in the treatment of infertility in some forms of azoospermia, and therefore knowledge of the specific degree of testicular damage is a necessary step in the evaluation of azoospermic men.

Key words: azoospermia, frequency, round cells, men.

Introduction

Several aetiologies for azoospermia exist, but the prospects of fertility in every case are very poor [11, 12, 5].

Azoospermia is found in approximately 5-20% of men evaluate for infertility [8, 6].

Records of semen analyses frequently contain the item "round cells" [10] without further specification of the type of cells. The "round cells" observed in the semen samples could be either of spermatogenic origin [3, 7, 1] or varying types of cells of non-spermatogenic origin [4, 14].

The purpose of this report was to provide an update on the clinical manifestation and frequency of azoospermia, also to investigate the cytological manifestation of such seminal plasma.

Material and Methods

We investigated 1333 patients (average 24.81 ± 1.90 years old) with congenital (n=299), inflammatory (n=671) and vascular (n=363) diseases of male genital system and 129 (25.63 ± 2.15 years old) healthy men as a control group.

The fellow **methods** were used:

– Andrological anamnesis and status;

– Spermatological analysis of the ejaculate and sperm morphology according WHO (1996);

– Cytological analysis of seminal plasma, used the Papanicolaou staining to distinguish "round cells" of spermatogenic and non-spermatogenic origin.

The following forms were identified: spermatopoetic – spermatogonia (dark and pale), primary spermatocytes, secondary spermatocytes, early and late spermatids (corresponding to Sa-Sb and Sc-Sd steps of spermatogenesis; non-spermatopoetic round cells.

– Statistical significance was verified with Student's *t*-test. The results are given as mean ± SD.

Results

I. Clinical Manifestation

Congenital diseases of male reproductive system and azoospermia

Quite natural and understandable data are complete lack of spermatogenesis in congenital diseases of male reproductive system (Fig. 1) in the cases of Del-Castilo and Klinefelter's syndrome (100%).

Interesting tracking were two other pathologies of the male reproductive system – Monorchism and Criptorchydism. In Monorchism, accompanying disease testis only

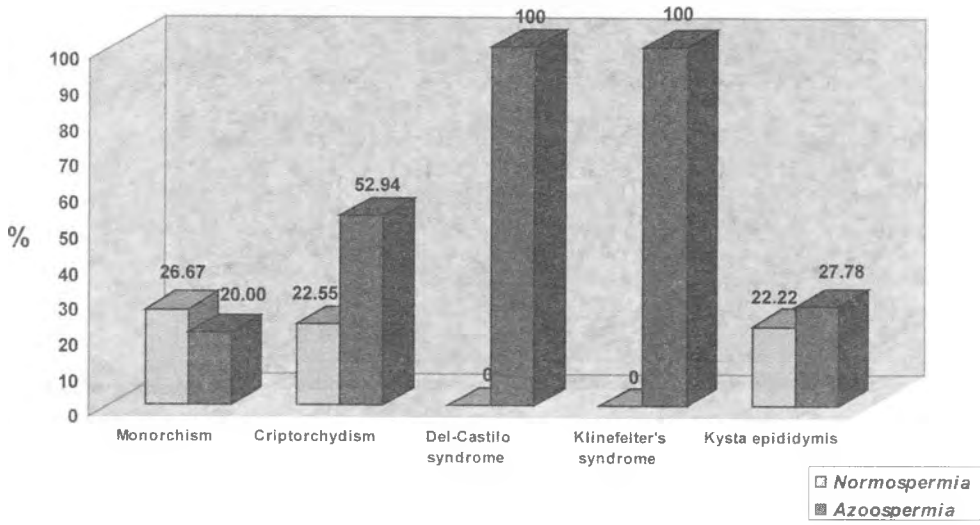


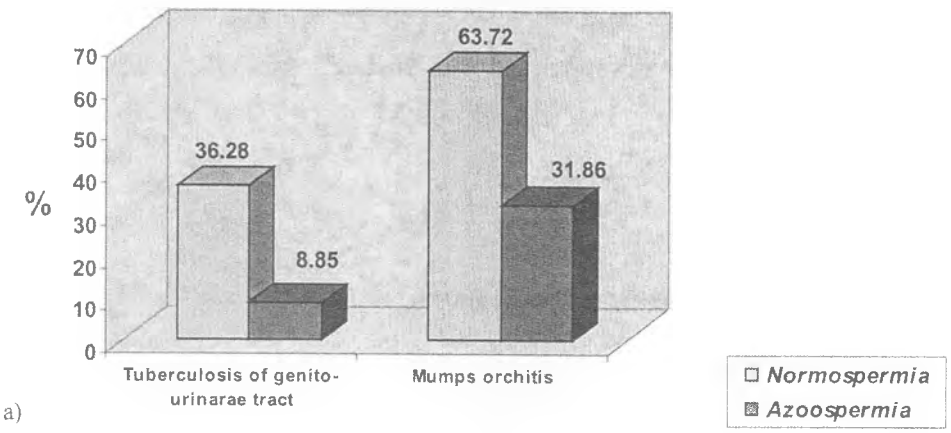
Fig. 1 Percent of azoospermia and congenital pathology

(egs. inflammation) may lead to azoospermia. As to Cryptorchydism, in 52% of cases leads to lack of spermatogenesis.

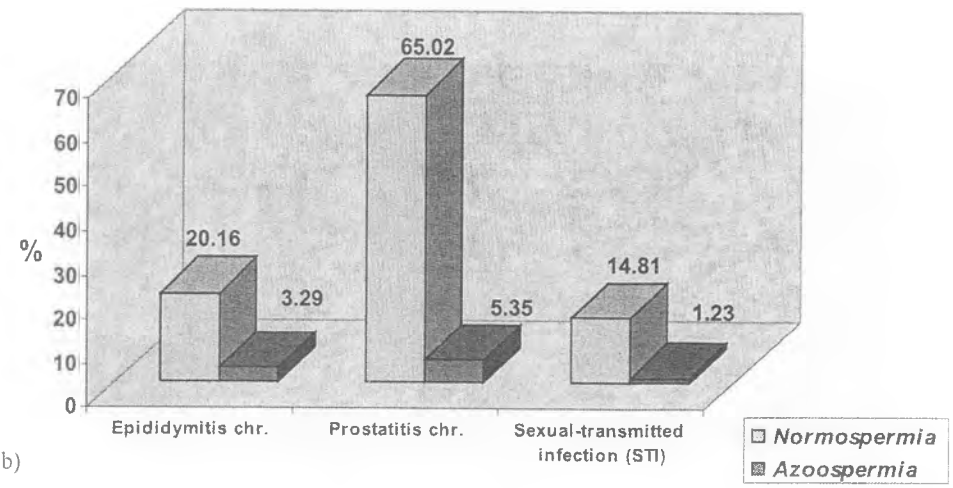
Specific inflammatory diseases of male genital system and azoospermia

Disturbing fact which is clear was that in inflammatory diseases of the male reproductive system, whether specific (16.95%) or nonspecific (29.26%), surveyed in 1333 on 50.34% in the patients establishes existing impaired fertility, respectively azoospermia (Fig. 2).

In non-specific inflammatory diseases of male genital system we proved azoospermia in 5.35 and 3.29% on cases with Prostatitis and Epididymitis chronica, respectively (see Fig. 2).



a)



b)

Fig. 2. Percent of azoospermia and inflammatory pathology of male genital tract: a) Specific inflammatory diseases; b) Non-specific inflammatory diseases

Vascular pathology of male genital system and frequency of azoospermia

Not least is the proportion of azoospermia (27.23%) in cases with vascular pathology of male genital system (Fig. 3).

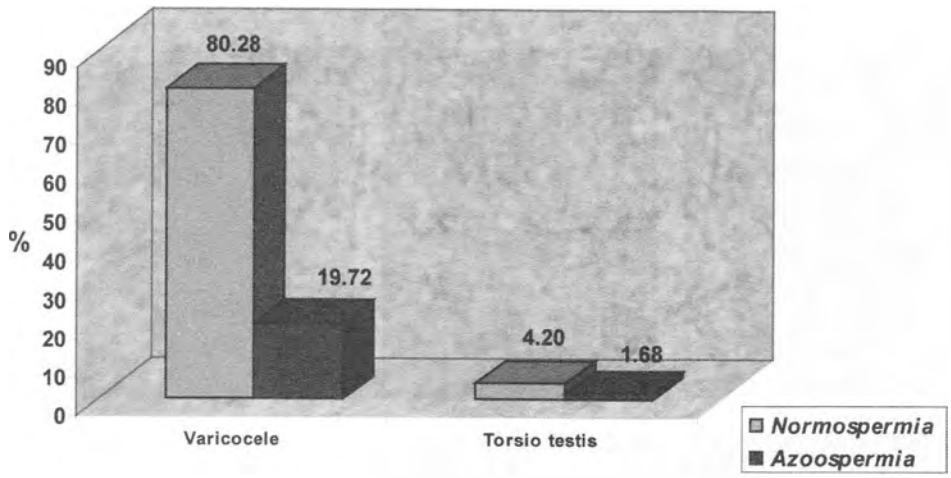


Fig. 3. Percent of azoospermia and vascular pathology of male genital tract

II. Cytological manifestations

Cytological examination of seminal plasma in cases with azoospermia were studied. Conditional observed cell divided into two groups (Fig. 4) – of spermatogenetic and non- spermatogenetic round cells (Fig. 5) origin.

The cells of spermatogenetic origin, most common are spermatidite (79%). As for those of non-spermatogenetic origin, most common are monocytes (2%) and macrophages (3%) (Fig. 6).

Discussion

Clinical manifestation and frequency of azoospermia – 20.18%, described by us are not different from the data by other authors [9, 13, 15, 12, 5].

Inflammatory and vascular diseases of male reproductive system were very often genital pathology attended with disturbances of sperm fertilizing ability. Azoospermia was found in 20.35% on specific, 5.38% in non-specific inflammatory diseases. Sexually-transmmited inflammation of male system led in to 1.23% absence of spermatozoa. Varicocele and azoospermia we proved in 19.72%.

In our study we conducted cytological examination of seminal plasma in cases with azoospermia. We made a comparison between the different types of round cells and the normal spermatogenesis. Spermatids were frequently counted – 79% of all type of cells. A number of spermatocytes in the semen is seldom accompanied by a large number of mature spermatozoa and severe disturbances of the spermatogenesis can be expected in such cases. On the other hand, degenerated spermatids are frequently

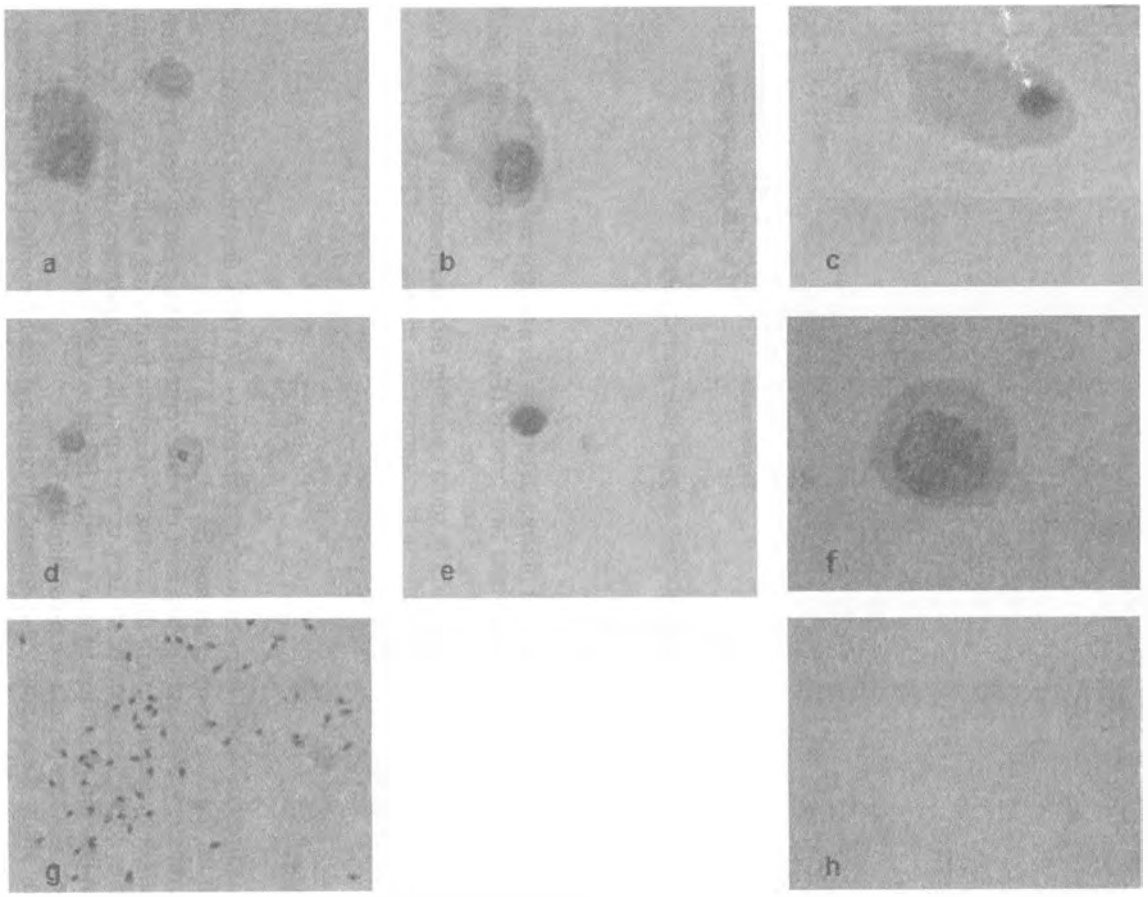


Fig. 4 Spermatogenic cells in the seminal plasma on azoospermic men
(a-e) spermatid cells; (f-h) spermatocytes. Papanicolau, × 600

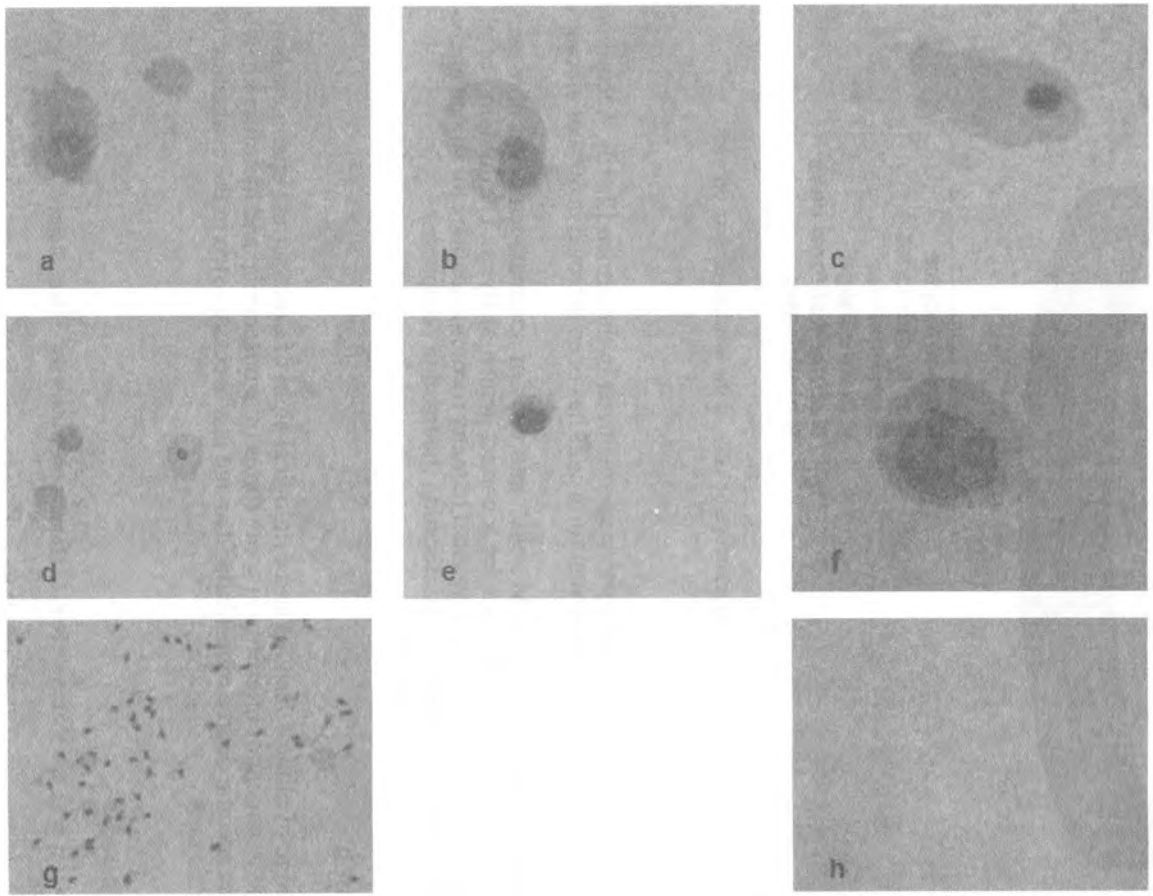


Fig. 5 Non- spermatogenic cells in the seminal plasma on azoospermic men.
(a) degenerating monocyte, (b) monocyte, (c-d) epithelial cells, (e) lymphocyte, (f) macrophage, (h) seminal plasma (azoospermia), (g) seminal plasma (normal, X400). Papanicolau, × 600

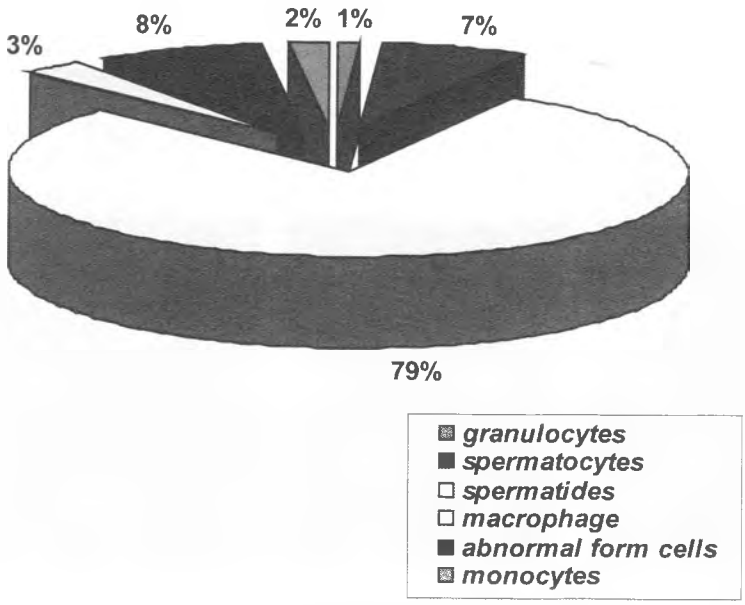


Fig. 6. Frequency of non-spermatogenic cells in the seminal plasma on azoospermic men

observed also in the presence of mature spermatozoa in the semen [2, 10]. According Holstein and Schirren (1979) abnormal form cells has been detected in 50% of all cases studied. We founded 8%.

A differentiation of the "round cells" into cells of spermatogenic and non-spermatogenic origin is very important for a correct semen analysis. The lumping of all "round cells" into one group (as suggested in many recommendations for semen analysis) highly increases the risk of misinforming the treating clinicians.

Conclusion

A knowledge of clinical features and cytological sight of azoospermia open new horizons in the treatment of infertility in some forms of azoospermia, and therefore knowledge of the specific degree of testicular damage is a necessary step in the evaluation of azoospermic men.

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