International Journal of Pathology; 2012; 10(1): 6-8

Experimental Pathology

Comparison of 5 cc and 20 cc Syringes on FNAC Yield of Spermatogenic cells of Goat Testis

Anwar Ul Haque
Islamabad Institute of Pathology & Labs and Department of Pathology, Azad Jammu & Kashmir Medical College, Muzaffarbad, Azad Kashmir, Pakistan

Objective: To compare yield of spermatogenic cells on Fine Needle Aspiration Cytology by 5 cc and 20 cc syringes on goat testis
Type of Study: Prospective, animal experimental
Place of Study: Islamabad Institute of Pathology and Azad Jammu Kashmir Medical College Muzaffarabad Azad Kashmir, Pakistan
Duration of Study: December 2011- January 2012
Material and Methods: Fine Needle Aspiration Cytology was performed on goat testis using 5 cc and 20 cc syringes. Five slides were made for each of 5 cc and 20 cc syringes (Total 10 slides). 10 passes were made for each aspirate of a slide. The slides were air dried and stained with Giemsa stain. Five optimal high dry (X400 magnification) fields on each slide were selected separately for spermatogoonia and spermatozoa. They were counted in each of respective fields. After totalling of the counts, average counts of spermatogoonia and spermatozoa per field were obtained on each slide. The average counts on five slides were then totaled and divided by five to obtain average count per field per slide count. A total of 100 fields were thus counted (For spermatogoonia and spermatozoa 25 separate fields (50 fields) for each of 5 cc and 20 cc syringes).
Results: The average counts per field per slide on 5 cc and 20 cc syringes respectively for spermatogoonia were 38.88 and 40.84; and for spermatozoa were 77.68 and 78.88. On cumulative 100 high power fields there was hardly any difference between 5 cc syringe and 20 cc syringe yields. These are essentially the same results and even do not require any statistical tests to prove their difference.
Conclusion: The yield of spermatogoonia and spermatozoa was essentially the same for 5 cc syringe and 20 cc syringes. The increased vacuum negative pressure did not result in increased yield of spermatogoonia and spermatozoa. 5 cc syringes which can be easily handled by one hand requiring no special instruments can bring adequate smears. **Key Words:** Male infertility, FNAC, Goat, Testis, Spermatogenesis, Syringes

Introduction

Fine Needle Aspiration Cytology (FNAC) is a useful technique for cell studies. It is frequently used for diagnosis of variety of types of diseases in human beings. FNAC is particularly used for diagnosis of benign versus malignant diseases. It is also used for checking the status of spermatogenesis in azoospermia. Different sizes syringes are used for aspirating the spermatogenic cells from testis. We compared the yield of FNAC yield of spermatogenic cells by 5 cc versus 20 cc syringes.

Correspondence:
Dr. Anwar Ul Haque.
haque8888@gmail.com

The author acknowledges the help and assistance of Mr. Noorullah in the study.

It was a prospective, animal experimental study carried out at Islamabad Institute of Pathology and Azad Jammu Kashmir Medical College Muzaffarabad Azad Kashmir, Pakistan.

Material and Methods:

A goat testis was obtained from a local butcher shop and kept in refrigerator at 4^{o}c. The Fine Needle Aspiration Cytology (FNAC) was performed on it using 5 cc and 20 cc syringes. 10 passes were made for each FNAC aspirate for every slide. The slides were air dried and stained with Giemsa stain. Five optimal high dry (X 400 magnification) fields on each slide were selected and spermatogoonia and spermatozoa were counted in each of these areas. After totaling of numbers in five high dry fields, average counts were obtained by dividing the counts by five. These average counts from five slides were summed and average

count per field per slide was calculated by dividing the figure by five.

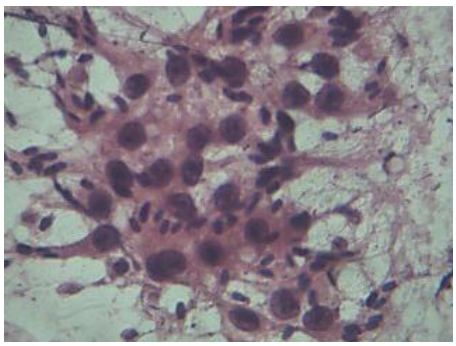

Figure 1: spermatogoonia and spermatozoa (Giemsa X 400)

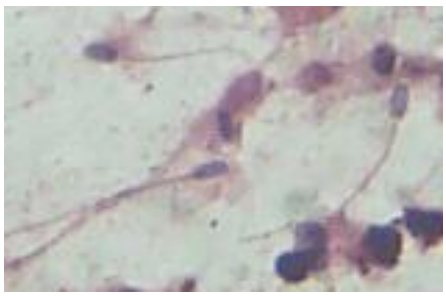

Figure 2: Spermatozooa with distinct tails (Giemsa X 400)

Table 1: FNAC yield using 5 cc syringes; Cells per high dry field: (Total count in 5 fields /5)

	Spermatogoonia	Spermatozoa
Slide 1	376 /5 = 75.2	445/5 = 89
Slide 2	125/ 5 = 25	323/5 = 64.6
Slide 3	150/5 = 30	349/5 = 69.8
Slide 4	108/5= 21.6	299/5 = 59.8
Slide 5	213/5 = 42.6	526/5 = 105.2
Average of five slides (per field per slide)	194/5 = 38.88	388.4/5 = 77.68

The number of the spermatogoonia and spermatozoa are given in table 1 and 2. In both types of syringe aspirates the numbers of spermatozoa were almost double the number of spermatogoonia. The yields are compared in Table 3. There was no significant statistical difference on the yield of spermatogenic cells among the two groups.

Results

The aspirates from both types of syringes were quite cellular. However the celullarity varied from slide to slide and field to field. All stages of spermatogenesis were observed. It was easy to identify the most immature cells i.e. the spermatogoonia and the most mature cells i.e. spermatozoa. The former was quite large and round containing a large nucleus with evenly diffusely distributed lightly stained chromatin while the later cells contained smaller, rectangular shaped darkly stained nucleus. (Figure 1) In well preserved cell the tails were also evident. (Figure 2) Separate fields were chosen for spermatogoonia and spermatozoa as some fields contained more of each.

Table 2: FNAC yield of testis aspirates using 20cc syringe; Cells per high dry field: (Total count in 5 fields /5)

Average counts	Spermatogoonia per high dry field: (Total count in 5 fields /5)	Spermatozoa per high dry field: (Total count in 5 fields /5)
Slide 1	203/5 = 40.6	313/5 = 62.6
Slide 2	176/5 = 35.2	308/5 = 61.6
Slide 3	198/5 = 39.6	414/5 = 82.8
Slide 4	270/5 = 54	531/5 = 106.2
Slide 5	174/5 = 34.8	406/5 = 81.2
Average of five slides	204/5 = 40.84	394.4/5 = 78.88

Table 3. Comparative average yield of spermatogoonia and spermatozoa per field per slide by 5 cc and 20 syringe aspirates.

	5 cc syringe aspirates	20 cc syringe aspirates
Spermatogoonia	38.88	40.84
Spermatozoa	77.68	78.88

Discussion

Fine Needle aspiration Cytology (FNAC) is an easy technique to study the cell morphology and numbers

of cells from different organs. No area of the body and no tissues are exempt. We have previously conducted several FNAC studies on variety of organs and tissues including brain, bone, soft tissue and spleen. [1-5] FNAC has been advocated to be incorporated in International Multiple Myeloma diagnostic criteria for its efficiency and simplicity. [6] Generally FNAC is used to rule in or out malignancy. Both primary and secondary malignancies are easily diagnosed by FNAC. Primary testicular tumors are easily diagnosed by FNAC.[7] Similarly FNAC is used in cases of testicular involvement by lymphoma[8]. FNAC is also very useful in diagnoses of non-neoplastic diseases such as infections, degeneration, necrosis and metabolic disorders.

FNAC is a very useful diagnostic modality in male infertility. [9,10]Many such patients present with azoospermia. As compared to FNAC testicular biopsy is more traumatic and painful procedure and perhaps may not be suited for small and atrophic testes for the fear of induction of fibrosis. On the other hand FNAC being easy and less traumatic is quite practical in such cases.

Various types of syringes are used for aspiration. [11]In this study we wanted to determine whether increased negative vacuum pressure will enhance the yield of spermatogenic cells in aspirates; 20 cc syringes with greater diameter and length creates more negative vacuum pressure than 5 cc syringes. We found no significant difference in the yields of spermatogenic cells between the two procedures suggesting that increasing the negative pressure does not improve the yields. We obtained more spermatozoa than spermatogoonia with both types of syringes; the numbers were almost double in both cases. We chose two extremes of cells which are easily identifiable i.e. spermatogoonia; the immature cell containing large nucleus with open chromatin and mature rectangular shaped spermatozoa with condensed chromatin.

As the yields of spermatogenic cells remain essentially the same with 5 cc and 20 cc syringes; the implication is important as 5cc syringes are easy to manipulate and handle with one hand and do not require special instruments to maintain negative pressure throughout the procedure.

Conclusion:

Both 5 cc and 20 cc syringes bring adequate aspirates. There is no statistical difference between the yields of both types of syringes thus suggesting that 5cc syringes will be quite adequate in getting good diagnostic material for evaluation of spermatogenesis.

References

1. Haque AU Fine Needle Aspiration Cytology of Tay-Sachs Disease. ACTA CYTOL 1995;39(4):762-764
2. Haque AU. Fine Needle Aspiration Cytology of the Brain: Fact or a Fancy. JPIMS 2002;13(1:652-655.
3. Mumtaz A and Haque AU. Fine Needle Aspiration Cytology in Splenomegaly Int. J Pathol 2005;3(1):25-28
4. Aamir S and Haque AU Langerhan Cell Histiocytosis A Case Report Int. J Pathol 2003;1(1):13-21
5. Moatasim A & Haque AU, Spectrum of Bone Lesions diagnosed on Fine Needle Aspiration Cytology. Int. J Pathol 2005;3(2):57-64
6. Haque AU Multiple Myeloma Need for incorporating Fine Needle Aspiration Cytology in Diagnostic Criteria Int. Journal of Pathology 2011;9(1):3-4
7. Pandey A, Nandini NM, Jha AK, Manjunath GV. Fine needle aspiration cytology and cell block in the diagnosis of seminoma testis. J Cytol 2011;28:39-41
8. Hayder S, Das DK, Björk O and LöwhagenT Fine Needle Aspiration Cytology (FNAC) of the Testes in Childhood Acute Lymphoblastic Leukemia and Non-Hodgkin's Lymphoma: Preliminary Report Pediatric Hematology-Oncology 1988;5(1):29-34
9. Adhikari RC Testicular fine needle aspiration cytology in azoospermic males Nepal Med Coll J 2009;11(2):88-91
10. Srivastava A, Raghavendran M, Jain M, Gupta S and Chaudhary H Fine-Needle Aspiration Cytology of the Testis: Can It Be a Single Diagnostic Modality in Azoospermia? *Urol Int* 2004;73:23-27
11. Haque AU & Moatasim A, A Comparative Study of Various Needle Gauges in Diagnostic Fine Needle Aspiration Cytology Int. J Pathol 2005;3 (1):48-51