Research Article

Diagnosis of oligomenorrhea and amenorrhea in females (infertility) of different ethnic groups of Quetta Balochistan

Afshan Majeed¹, Masroor Ahmad Bajwa², Shagufta Saddozai¹, Nosheen Rafiq¹, Ambreen Ijaz¹, Muhammad Kamran Taj^{2*}, Umbreen Zafar², Saima Azam², Sakina Khan², Syeda Ayesha Ali² and Ashiq Hussain³

1. Department of Zoology, Sardar Bahadur Khan Women University, Quetta, Balochistan-Pakistan

2. CASVAB, University of Balochistan, Quetta-Pakistan

3. Department of Microbiology, Bolan University of Medical & Health Science, Quetta-Pakistan

*Corresponding author's email: kamrancasvab@yahoo.com

Citation

Afshan Majeed, Masroor Ahmad Bajwa, Shagufta Saddozai, Nosheen Rafiq, Ambreen Ijaz, Muhammad Kamran Taj, Umbreen Zafar, Saima Azam, Sakina Khan, Syeda Ayesha Ali and Ashiq Hussain. Diagnosis of oligomenorrhea and amenorrhea in females (infertility) of different ethnic groups of Quetta Balochistan. Pure and Applied Biology. Vol. 10, Issue 2, pp438-444. <http://dx.doi.org/10.19045/bspab.2021.100047>

Received: 27/07/2020

Revised: 26/09/2020

Accepted: 07/10/2020

Online First: 20/10/2020

Abstract

The difficulty to conceive is seen as a major problem among families especially in Pakistan. The purpose of the study was to evaluate different causes of female infertility in different ethnic groups of Baluchistan, using ultrasonography technique and supporting information. The sample size in existing study was 100 samples of infertile females; the age of female in existent study was divided into 5 groups i.e., 20 – 25, 26 – 30, 31 – 35, 36 – 40, and 41-45. It was concluded that the increasing age has a relationship with increased frequency of infertility. The results were significant at $p < .05$, $\chi^2 = 53.87$, $df = 4$, $\alpha = 0.05$, $P < 0.00001$. Oligo menorrhea between ethnic groups was found to be Pakhtoon group (17%), Baloch (50%), Hazara community (20%) and others (67%). Amenorrhea was more widespread in Baloch ethnic group 40%. The normal menstruation amongst ethnic groups was in range of 11-25%. ($\chi^2 = 42.060$, $\alpha = 0.05$, $P = 0.0001$). Consulting the findings Endometriosis was more prevalent in Baloch ethnic group (14%), Pelvic Inflammatory Disease was found to be (26%) with higher occurrence in Pakhtoon (10%) and Hazara (9%) group while Ovarian failure (13%) was more common in Hazara community ($\chi^2 = 10.41$, $df = 4$, $\alpha = 0.05$, $P < 0.05$). Different types of fibroids (Submucosal Fibroids, Intramural Fibroids, Subserosal Fibroids) were also seen in infertile female visiting clinics. The present study concluded that the technique of Ultrasonography is very much helpful for knowing the causes, analysis and management of female infertility. This study is beneficial because it examines the indicators for the causes of infertility among different ethnic groups, no such statistics were offered previously in Baluchistan due to lack of resources concerning female infertility problem.

Keywords: Fertility; Infertility; Intramural; Submucosal; Subserosal; Ultrasonography

Introduction

Infertility is the inability of a couple to accomplish pregnancy over an average

period of one year regardless of sufficient, regular (3-4 times per week), unprotected sexual intercourse [1]. According to the

estimates the problem of infertility is growing in the world [2]. Traditionally, Pakistani culture has favored high fertility because children are seen as symbol of social and economic wellbeing. This is evident from a proverb that "May your progeny fill the hills and mountains." High fertility is preferred because a woman raises her importance in the family by giving birth to children, preferably sons [3]. Pakistan is currently included in populated countries of the world; despite of that, the country also has a high proportion of infertility (21.9%) [4]. It is studied that there is a requirement to develop facilities for management of infertility [5]. The study of Infertility is important in knowing its causes and effects on environment [6]. It is common to use the technique of ultrasonography in infertility examinations, with the practice of which ovarian adjustments and cyclic uterine abnormalities can be evaluated and anomalies like fibroids, cysts, tumors and endometrioses can be diagnosed in the infertile female [7].

There are different causes of female infertility which influences fertility ratio. Female age is the most basic factor known to effect fertility. The ratio of fertility starts to decline from the age of 30 [8]. The number of active oocytes in the ovaries decreases with increasing age (35 years or above) [9]. Infertile patients with ovulatory dysfunction represent higher percentage of primary infertility. [10]. Endometriosis is a condition with existence of endometrial tissue exterior to uterine cavity; it is an enigmatic and complicated type of pathology, a mystery whose numerous fragments still remains disconnected irrespective of studies which are going from epochs. A basic cause of infertility, endometriosis has a dominance of 25–40% in infertile and 0.5–5% in fertile women [11].

There is lack of statistical information regarding female infertility in Baluchistan;

hence present study was aimed to evaluate the causes of this problem in women of different communities of the Province. Although various tests have been established for the analysis of infertility with their own merits and demerits, but the technique of ultrasonography is found to be most cost effective and sufficient tool in Baluchistan for the identification of causes of infertility. Therefore, present study was designed to use ultrasonography along with other supporting information for the evaluation and analysis of problem.

Material and Methods

Study area

The study was performed in the OPDs of Gynecological Department and Radiological Department of Bolan Medical College (BMC) hospital Quetta, Baluchistan. The duration of study was from May 2015-January 2016.

Study design

In this presence study, at the start of research 100 infertile females who sought medical assistance in OPDs of Gynecological Department and Radiological Department of Bolan Medical College and hospital were included by random sampling method. One hundred and twenty seven (127) patients were excluded from the study due insufficient information.

Exclusion criteria

The exclusion criteria for patients was Infertility period less than 1 year, the patients who were not ready to provide their Ultrasound reports, personal facts and male factor infertility was also excluded from study.

Inclusion criteria

100 infertile females with infertility period above 1 year, willing to provide infertility history and ultrasound reports were include in the study.

The age of female was divided into 5 groups i.e., 20 – 25, 26 – 30, 31 – 35, 36 – 40, and 41-45. Initial assessments were done by

taking ultrasound reports and comprehensive history of patients including age, menstrual cycle irregularities, presence of cysts or fibroids in infertile female population, Endometriosis and conditions of ovaries and uterus with the help of ultrasound were examined. For ultrasonography machine Mindary 5MHz was used by the concerned doctors of radiology department. Statistics were calculated with the help of SPSS Version 11.0. The results were exposed to Chi-square test to conclude the various causes of infertility evaluated with the help of ultrasound reports and supporting information.

Results

Maximum age group for Pakhtoon assemblage visiting infertility clinic was 31-35, while for Hazara, Baloch, and other ethnic groups it was 36-40 years (Table 1). So, it was concluded that the increasing age has a relationship with increased frequency of infertility. The results were significant at $p < .05$, calculated value of Chi-square for results was 53.87, $df = 4$, $\alpha = 0.05$, $P < 0.00001$. The comparison of Menstrual cycle problems in infertile women of different ethnic groups of Baluchistan (Table 2). According to the results oligomenorrhea was more prominent in Pakhtoon ethnic group

(47%), Amenorrhea was more prevalent in Baloch community (40%) while normal menstrual cycle was seen in higher percentage in Hazara group. ($\chi^2 = 42.060$, $\alpha = 0.05$, $P = 0.0001$). The results were significant at $p < .05$ (Table 3). Results of Ultrasound presenting reasons of infertility in different Ethnic groups of Quetta Baluchistan. The total percentage of ovarian failure in population was 32%, Endometriosis was seen in 37% while PID was prevalent in 26% population. ($\chi^2 = 10.41$, $\alpha = 0.05$, $P = 0.034$, $df = 4$) the results were significant at $p < 0.05$.

(Table 4). Ultrasound reports presenting Uterine abnormalities in the form of formation of Fibroids in different Ethnic groups of Quetta Baluchistan. Fibroids were more persistent in Pakhtoons (9%) with total percentage of (29%) in population. ($\chi^2 = 1.81$, $\alpha = 0.10$, $p < .10$) non-significance 0.612.

There was a greater percentage of subserosal fibroids (18%) while intramural fibroids were in less percentage (18%). The total percentage of fibroids formation in the population was found to be about 29% (Table 5).

Table 1. Showing presence of infertility cases in different ethnic groups of Quetta Baluchistan

Age	Pakhtoon(n)	Hazara(n)	Baloch(n)	Others(n)	Mean($\pm$ SD)
20-25	5	1	3	0	3 $\pm$ 1.70
26-30	9	5	4	4	6 $\pm$ 2.38
31-35	12	7	7	0	9 $\pm$ 2.9
36-40	6	12	14	5	10 $\pm$ 1.9
41-45	4	0	2	0	3 $\pm$ 1.41

Table 2. Comparison of Menstrual cycle problems in infertile women of different ethnic groups of Baluchistan

Menstrual cycle	Hazara n (%)	Pakhtoon n (%)	Baloch n (%)	Others n (%)
Oligomenorrhea	5 (20)	17 (47)	15 (50)	6 (67)
Amenorrhea	6 (24)	10 (28)	12 (40)	2 (22)
Normal menstruation	14 (56)	9 (25)	4 (10)	1 (11)
Total	25(100)	36(100)	30(100)	9(100)

Table 3. Results of Ultrasound presenting reasons of infertility in different Ethnic groups of Quetta Baluchistan

	Baloch (%)	Pakhtoon (%)	Hazara (%)	Others (%)	Total %age
Ovarian Failure	5	10	13	2	32
Endometriosis	14	11	8	4	37
Pelvic Inflammatory Disease	4	10	9	3	26

Table 4. Results of Ultrasound reports presenting Uterine abnormalities in the form of formation of Fibroids in different Ethnic groups of Quetta Baluchistan

	Baloch (%)	Pakhtoon (%)	Hazara (%)	Others (%)	Total Percentage
Fibroids Formation	9%	5%	7%	2%	29%

Table 5. Results of Ultrasound reports showing the nature of Fibroids in infertile women

Nature of Fibroids	Percentage
Submucosal Fibroids	7 %
Intramural Fibroids	4 %
Subserosal Fibroids	18%
Total	29%

Discussion

Parentage is one of the most important desires in maturity, and most of the people have generation plans that include children. Still, not all couples who want pregnancy will achieve it spontaneously, and a fraction of them will need medical help to resolve causal fertility problems. According to the literature, infertility is a multidimensional health issue with different causes including not only the defects in fallopian tubes, ovaries and endometriosis but also different life style factors. In today's civilization delaying pregnancy is a mutual choice primarily because of work, study or career. Fertility has an opposite relation with age. As with growing age the amount of eggs declines in ovaries so this affects fertility ratio. The results of current study presented that the age group above 30 was found to be linked with infertility. The results of present study were similar to that of the studies done by Ramzy *et al.* [12], according to the study

age >35 was found to have significant effect on spontaneous pregnancy rate and conception. 20 years was taken as lowest age limit in current study for the reason that commonly puberty starts at the age of 13 years and it takes time for the women to get married, so 20 years was best age to study the infertility cases, while age of 45 years was taken as upper age limit because usually menopause starts in this age. In previous two studies the age group was found to be 15 to 49 years [13, 14].

Abnormal menstrual cycle is an important factor related with reduced fertility rate as it may display irregularities of the ovulation, conception, or constant pregnancy. Amenorrhea is the shortage of menstruation. Women who have missed at least three menstrual periods subsequently said to have amenorrhea. The Oligomenorrhea is a menstrual problem generally with menstruation pauses between 6 months or 6 weeks. The percentage of Amenorrhea in

present study was found to be 10-40%, while percentage of Oligomenorrhoea in the population was found to be 17-67%. The normal menstruation in infertile women was found to be percentage of 11-25%. The results of present study in respects to the condition of Oligomenorrhoea (50%) which occurred in Baloch population were alike to the studies of kumkum *et al.* [15] while the results were different for Amenorrhoea (6%) from the outcomes of same study.

Endometriosis is a condition which disturbs the lives of almost 10% of women of reproductive age as according the studies done by Gylfason *et al.* [16] A meta-survey of 22 studies evaluating In-vitro fertilization displayed that patients with endometriosis had a lesser pregnancy rate as compared to the patients in which the condition of endometriosis was lacking, also there occur less presence of fertilization and oocyte production as recorded by Barnhart *et al.* [17]. In the present study Endometriosis in the population was found to be in 37% in infertile women of different ethnic groups. The consequences of present study were changed from those of the results of study accompanied by Bulletti *et al.* [18] in which the percentage of Endometriosis was found to be 6-10% in general female population.

According to Coulam [19] premature ovarian failure (POF) is a disorder in which after 40 years of age disturbances of ovarian function were found. Furthermore the situation of ovarian failure was associated with amenorrhoea and oligomenorrhoea as displayed by Coulam *et al.* [20]. The results of present studies found the presence of ovarian failure in total of 32% in infertile women of different tribal groups as evaluated through ultrasound reports. Relating the consequences of current study with earlier studies it was found that incidence of ovarian failure was 4%, 12.7% and 31% as according to the studies of Coulam *et al.* [21], Vegetti *et al.* [22], VanKasteren *et al.* [23].

Tubal factor infertility which is blocking of fallopian tubes, is one the most common cause of female infertility and recognized in approximately 30%-35% of infertile women as studied by Miller *et al.* [24]. The most prevailing reason of tubal factor infertility documented is pelvic inflammatory disease (PID). The Pelvic inflammatory disease is an infection of upper genital tract and in the population of existing study it was recorded as 26% somewhat different to a similar population in San Francisco, where PID was found to be 40% as studied by Safrin *et al.* [25].

It is generally assumed that sub-mucous fibroids have an adverse effect on fertility rates and early pregnancy, because of their link with the endometrial cavity. Several published study examinations found a relation of fibroids with decreasing fertility rate Farhi *et al.* ; Surrey *et al.* ; Hart *et al.* ; Bulletti *et al.* [26-29]. According to the studies of Bernard *et al.* [30] and Klatsky *et al.* [31], results of presence of intramural and sub mucosal fibroids were found to have link with infertility, as found in the current study. In the population of present study all the three categories of fibroids were found. From the types of fibroids, the Subserosal Fibroids 18%, Intramural Fibroids were found to be 4 %, while Submucosal Fibroids were present 7% of population.

Conclusion

The technique of Ultrasonography has been found to be sufficient, safe, quick, and cost-effective means of accessing Infertility problems. The causes of female infertility were associated with increasing age, endometriosis, and ovarian failure, irregularities in menstrual cycle, pelvic inflammatory disease and presence of fibroids. The government and administrations must try to allocate necessary resources to solve the problem of infertility in the population. The socio-economic and medical support of infertile women, which

means easier access to medical services and higher social support are important requirements in solving the problem.

Authors' contributions

Conceived and designed the experiments: A Majeed, N Rafiq & MK Taj, Performed the experiments: A Majeed, MA Bajwa & S Saddozai, Analyzed the data: A Majeed, N Tariq, S Azam & A Hussain, Contributed materials/ analysis/ tools: A Majeed, A Ijaz & S Khan, Wrote the paper: A Majeed, U Zafar & SA Ali.

Acknowledgment

This study pays special thanks to director (CASVAB) for his support, advice and guidance. The study also recognizes invaluable assistance provided by Dr. Shazia, Dr. Tasneem Ashraf and Dr. Sumera (Bolan Medical Hospital Quetta). Special thanks to all those women who visited female infertility center and for their cooperation due to which this study became successful.

References

1. Levine H, Jogensen N, Martino-Andrade A, Mendiola J, Weksler-Derri D, Mindlis I, Pinotti R & Swan SH (2017). Temporal trends in sperms count: A systematic view and meta regression analysis. *Hum Repord* 23: 646-659.
2. Anyanmu MO & Iodoko P (2017). Prevalance of fertility at the Gambian Teaching Hospital. *Sci Open Access J: Womens Health and Gyencology*.
3. Central Bureau of Statistics (2003). Population monograph of Nepal. Kathmandu.
4. Tahir F, Shahab M, Afzal M, Subhan F, Sultan S, Kazi BM & Dil AS (2004). Male reproductive health: An important segment towards improving reproductive health of a couple. Population Association of Pakistan, Islamabad, Pakistan, 227-248.
5. Anyanmu MO & Iodoko P (2017). Prevalance of fertility at the Gambian Teaching Hospital. *Scien Open Ace J: Womens Health and Gyencology*.
6. Ussher J (1990). Negative images of female sexuality and reproduction: reflecting mysogin or misinformation. *Psy Women News* 5: 17-29.
7. Tritsch TI & Ruttem S (1989). Transvaginal ultrasonography in the management of infertility (Rev. ed). Boca Raton: Commercial Rubber Company Press.
8. Taylor A (2003). ABC of subfertility: Extent of the problem. *BMJ* 327(7412): 434-436.
9. Balen AH, & Rutherford A (2007). Managing anovulatory infertility and polycystic ovary syndrome. *BMJ* 335(7621): 663-666.
10. Ozkan S, Murk W & Arici AA (2008). Endometriosis and Infertility Epidemiology and Evidence-based Treatments. *Ann New York Acad Sci* 92-100.
11. Tritsch TI & Ruttem S (1989). Transvaginal ultrasonography in the management of infertility (Rev. ed). Boca Raton: Commercial Rubber Company Press.
12. Ramzy AM, Sattar M, Amin Y, Mansour RT, Serour GI & Aboulghar MA (1998). Uterine myomata and outcome of assisted reproduction, *Human Repro* 13(1): 198-202.
13. Safrin S, Schachter J, Dahrouge D, & Sweet RL. (1992). Longterm sequelae of acute pelvic inflammatory disease. A retrospective cohort study. *Amer J Obs Gyn* 166: 1300-1305.
14. Adetoro OO & Ebomoyi EW (1991). The prevalence of infertility in a rural Nigerian community. *African J Medi Medi Sci* 20: 23.
15. Kumkum, Jasmine K, Shweta G & Ajeshwar NP (2006). Hyperprolactinemia and its correlation

- with hypothyroidism in infertile women. *J Obst Gyn India* 56(1): 68-71.
16. Glyfason JT, Kristjansson KA, Sverrisdottir G, Jonsdottir K, Rafnsson V & Geirsson RT (2010). Pelvic endometriosis diagnosed in an entire nation over 20 years. *Am J Epiderm* 172: 237-243.
 17. Barnhart K, Dunsmoor-Su R & Coutifaris C (2002). Effect of endometriosis on in vitro fertilization. *Fertil Steril* 77: 1148-1155.
 18. Bulletti C, Elisabetta M, Coccia S, Battistoni S & Borini B (2010). Endometriosis and infertility. *J Assis Rep Gene* 27(8): 441-447.
 19. Coulam CB. (1982). Premature gonadal failure. *Fertil Steril* 38: 645-655.
 20. Coulam CB, Adamson SC & Annegers JF (1986). Incidence of premature ovarian failure. *Obs Gyn* 67: 604-606.
 21. Coulam CB, Stringfellow S, & Hoefnagel D (1983). Evidence for a genetic factor in the etiology of premature ovarian failure. *Fertil. Steril* 40: 693-695.
 22. Vegetti W, Grazia, Tibiletti M, Testa G, DeLauretis Y, Alagna F, Castoldi E, Taborelli M, Motta T, Bolis PF, Dalpra L & Crosignani PG (1998). Inheritance in idiopathic premature ovarian failure: analysis of 71 cases. *Hum Reprod* 13: 1796-1800.
 23. VanKasteren YM, Hundscheid RD, Smits AP, Cremers FP, Van Zonneveld P, & Braat DD (1999). Familial idiopathic premature ovarian failure: an overrated and underestimated genetic disease. *Hum Reprod* 14: 2455-2459.
 24. Miller JH, Weinberg RK & Canino NL (1999). The pattern of infertility diagnoses in women of advanced reproductive age. *Ameri J Obs Gyn* 181: 952-957.
 25. Safrin S, Schachter J, Dahrouge D, & Sweet RL. (1992). Longterm sequelae of acute pelvic inflammatory disease. A retrospective cohort study. *Amer J Obs Gyn* 166: 1300-1305.
 26. Farhi J, Ashkenazi J, Feldberg D, Dicker D, Orvieto R & Ben-Rafael Z (1995). Effect of uterine leiomyomata on the results of in vitro fertilization treatment. *Human Reprod* 10: 2576-2578.
 27. Surrey ES, Lietz AK, & Schoolcraft WB (2001). Impact of intramural leiomyomata in patients with a normal endometrial cavity on in vitro fertilization-embryo transfer cycle outcome. *Fertil Steril* 75: 405-410.
 28. Hart R, Khalaf Y, Yeong CT, Seed P, Taylor A, & Braude P (2001). A prospective controlled study of the effect of intramural uterine fibroids on the outcome of assisted conception. *Hum Reprod* 16: 2411-2417.
 29. Bulletti C, Elisabetta M, Coccia S, Battistoni S & Borini B (2010). Endometriosis and infertility. *J Assis Rep Gene* 27(8): 441-447.
 30. Bernard G, Darai E, Poncelet C, Benifla JL & Madelenat P (2000). Fertility after hysteroscopic myomectomy: effect of intramural myomas associated. *European j obs gyn reprod bio* 88: 85-90.
 31. Klatsky PC, Lane DE, Ryan IP & Fujimoto VY (2007). The effect of fibroids without cavity involvement on ART outcomes independent of ovarian age. *Hum Reprod* 22: 521-526.