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# Male Vs Female Child Ratio Determines Chances of Cervix Cancer in Women

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**Abstract:** It is generally accepted that intercourse and childbearing are in some way associated with the occurrence of cervical cancer. Cervical cancer is predominantly a disease of married life, associated with women who have given birth to 1 or more children. In order to analyse the respective relationship between male and female child ratio and risk of cervix cancer, the present study was undertaken. For this purpose epidemiological study of 400 cases of cervix cancer patient of Mahavir Cancer Institute and Research Centre between 2008 and 2009 with parity and number of male and female child were reviewed. In this study, it was observed that mean number of male child was 2.44, mean number of female child was 1.74 while average parity was 4.64 in all patients. Ratio of male / female child was 1.41 in cervix cancer patients group. Thus it was concluded that microchimer of Y chromosome persist in female body up to many decades, which finally causes cervix cancer. If ratio of male vs. female child is more than one there may be increased chances of cervix cancer in mother.

**Key words:** Cervix cancer · Microchimer · Pariety · Ychromosome · Epidemiology

## INTRODUCTION

Globally, the burden of new cancer cases in 2000 was estimated to be around 10 million with more than half of these cases originating from the developing world population. It is estimated that by the year 2020 there will be almost 20 million new cases. Cancer of the cervix is responsible for approximately 493,100 new cases and more than 273,000 deaths occur each year among women worldwide. In India about 1,00,000 new case of cervical cancer diagnosed every year.

It is generally accepted that intercourse and childbearing are in some way associated with the occurrence of cervical cancer. In the literature it is clearly shown that the ages at marriage of cervical cancer patients are lower than those of control patients [1, 2] as also are the average ages at marriage of the cervical cancer groups [3]. In agreement with an earlier marriage, cervical cancer patients have their first child earlier than control women [4]. The average number of children in cervical cancer groups is higher than in control groups. However, after standardization for age at marriage, Wynder [1] and Boyd and Doll [3] no longer found a difference with respect to parity. On the other hand, Aitken-Swan and Baird [5] reported more women with larger families in cervical cancer groups compared with control groups. Boyd and Doll [3] supported the view that some factor associated with coitus (and particularly with early coitus) rather than with childbearing is of primary importance in the causation of the disease. Maliphant [6] reported that cervical cancer is predominantly a disease of married life, showing a predilection for women who have given birth to 1 or more children.

In order to analyse the respective relationship between male and female child ratio and risk of cervix cancer, the present study was undertaken. For this purpose epidemiological study of cervix cancer patient of Mahavir Cancer Institute and Research Centre were analyzed.

## MATERIALS AND METHODS

The medical records of 400 patients treated at the Mahavir Cancer Institute and research Centre for cervix cancer between 2008 and 2009 with preoperative parity and number of male and female child were reviewed. Approval for this study was obtained from the institutional Ethics committee of the Mahavir Cancer Institute and Research Centre. There were a total of 400 patients with cervix cancer (stage-IIb) treated at the Institute during this period.

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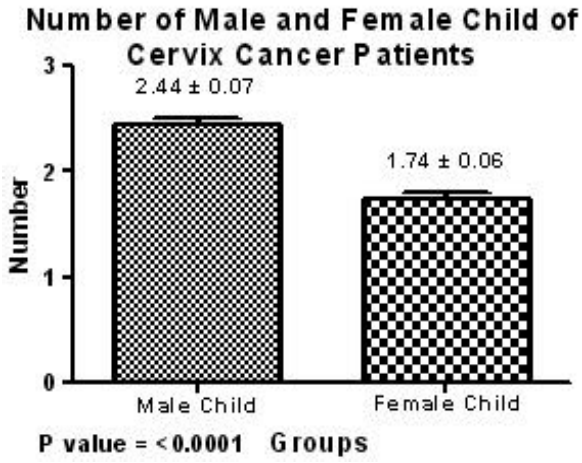


Fig. 1: Showing male and female child of cervix cancer patients

Table:1: Showing ratio of Male and Female Child of Cervix Cancer patients

| Total Number of Patients | Sex of Child | (Mean ± SD) | P value |
|---|---|---|---|
| 400 | Male | 2.44 ± 1.411 | <0.0001 |
| | Female | 1.74 ± 1.2851 | <0.0001 |

Ratio of male and Female child = 2.44 / 1.74 = 1.41

Patients were evaluated for their parity, age, number of male and female child and grade according to International Federation of Gynecologists and Obstetricians (FIGO) guideline. All patients were staged according to the FIGO staging system. The pathology for all patients was reviewed by a gynecologic pathologist.

## RESULTS

It was observed that mean number of male child was 2.44, while mean number of female child was 1.74 in all patients included in study. Average parity was 4.64. ratio of male / female child was 1.41 in cervix cancer patients group.

## DISCUSSION

During pregnancy, fetal cells enter the maternal circulation [7, 8]. These cells may persist in maternal tissues decades after delivery [9, 10] and include hematopoietic or mesenchymal stem cells.Some microchimerism were observed in female bone marrow decades after pregnancy [9, 11] They may engraft in a variety of maternal tissues especially if there is specific organ damage [12, 13]. In these tissues, fetal cells adopt the phenotype of the affected maternal organ. These observations combined with similar results in animal studies clearly suggest a specific homing of fetal progenitor cells to maternal effected tissues and their differentiation into the phenotype of the maternal tissue [14-16]. The presence of microchimerism has been found in cervix cancer patients [17]. Chimerism occurs in thyroid, lung, skin and lymph nodes of women with sons. We also found that if ratio of male and female child is more than one, there are chances of cervix cancer in female, because microchimer of Y cell may cause cervix cancer. Y-chromosome-positive cells were found in thyroid, lung, skin and lymph node samples of women [18].

## CONCLUSION

Thus it is concluded that microchimer of Y chromosome persist in female body upto many decades, which finally causes cervix cancer. If ratio of male vs female child is more than one there may be increased chances of cervix cancer in mother.

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## REFERENCES

1. Wynder, E.L., J.S. Cornfield and K.R. Doraiswami, 1954. A study of environmental factors in carcinoma of the cervix. Amer. J. Obstet. Gynec., 68: 1016.
2. Terris, M. and M.C. Oahnan, 1969. Carcinoma of the cervix. An epidemiologic study. J. Amer. med. Ass., 174: 1847.
3. Boyd, J.T. and R. Doll, 1964. A study of the etiology of carcinoma of the cervix uteri. Brit. J. Cancer, 18: 419.
4. Christopherson, W.M. and J.E. Parker, 1965. Relation of cervical cancer to early marriage and childbearing. New Eng. J. Med., 5: 235.
5. Aitken-Swan J. and D. Baird, 1966. Cancer of the uterine cervix in Aberdeenshire. Epidemiological aspects. Brit. J. Cancer, 20: 624.
6. Maliphant, R.G., 1949. The incidence of cancer of the cervix. Brit. Med. J., 1: 978.

7. Krabchi, K., F. Gros-Louis, J. Yan, M. Bronsard, J. Masse, J.C. Forest and R. Drouin, 2001. Quantification of all fetal nucleated cells in maternal blood between the 18th and 22nd weeks of pregnancy using molecular cytogenetic techniques. Clin Genet, 60: 145-150.
8. Ariga, H., H. Ohto, M.P. Busch, S. Imamura, R. Watson, W. Reed and T.H. Lee, 2001. Kinetics of fetal cellular and cell-free DNA in the maternal circulation during and after pregnancy: implications for noninvasive prenatal diagnosis Transfusion. 41:1 524-1530.
9. Bianchi, D.W., G.K. Zickwolf, G.J.Weil, S. Sylvester and M.A. DeMaria, 1996. Male fetal progenitor cells persist in maternal blood for as long as 27 years postpartum. Proc. Natl. Acad. Sci. USA. 93: 705-708.
10. Artlett, C.M., L.A. Cox, R.C. Ramos, T.N. Dennis, R.A. Fortunato, L.K. Hummers, S.A. Jimenez and J.B. Smith, 2002. Increased microchimeric CD4_ T lymphocytes in peripheral blood from women with systemic sclerosis. Clin. Immunol., 103: 303-308.
11. O'Donoghue, K., J.Chan, J. De La Fuente, N. Kennea, A. Sandison, J.R. Anderson, I.A. Roberts and N.M. Fisk, 2004. Microchimerism in female bone marrow and bone decades after fetal mesenchymal stem-cell trafficking in pregnancy. Lancet. 364: 179-182.
12. Johnson, K.L., O. Samura, J.L. Nelson, M. McDonnell and D.W. Bianchi, 2002. Significant fetal cell microchimerism in a nontransfused woman with hepatitis C: evidence of long-term survival and expansion. Hepatol., 36: 1295-1297.
13. Khosrotehrani, K., K.L. Johnson, D.H. Cha, R.N. Salomon and D.W. Bianchi, 2004. Transfer of fetal cells with multilineage potential to maternal tissue. JAMA. 292: 75-80.
14. Srivatsa, B., S. Srivatsa, K.L. Johnson, O. Samura, S.L. Lee and D.W. Bianchi, 2001. Microchimerism of presumed fetal origin in thyroid specimens from women: a case-control study. Lancet, 358: 2034-2038.
15. Khosrotehrani, K., R.R. Reyes, K.L. Johnson, R.B. Freeman, R.N. Salomon, I. Peter, H. Stroh, S. Guegan and D.W. Bianchi, 2007. Fetal cells participate over time in the response to specific types of murine maternal hepatic injury. Hum Reprod. 22: 654-661.
16. Khosrotehrani, K., M. Leduc, V. Bachy, H.S. Nguyen, M. Oster, A. Abbas, S. Uzan and S. Aractingi, 2008. Pregnancy allows the transfer and differentiation of fetal lymphoid progenitors into functional T and B cells in mothers. J. Immunol., 180: 889-897.
17. Cha, D., K. Khosrotehrani, Y. Kim, H. Stroh, D.W. Bianchi and K.L. Johnson, 2003. Cervical cancer and microchimerism. Obstet Gynecol., 102: 774-781.
18. Marije, K., C.L. Idske, H. Kremer, J.B. Hans, S.H. Mark, H. Emile de, J.A. Bruijn and M.B. Ingeborg, 2008. Chimerism occurs in thyroid, lung, skin and lymph nodes of women with sons; J.Reprod Immun., 78: 68-75.