

# Adenomyosis in a patient with mosaic Turner syndrome: case report

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**Submitted:** 25 July 2007

**Accepted:** 10 October 2007

Arch Med Sci 2008; 4, 1: 85–87

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## Abstract

Adenomyosis has only been reported in one patient with mosaic Turner syndrome. We report a case of mosaic Turner syndrome in a patient who suffered from hypermenorrhoea and severe anaemia due to adenomyosis. A 40-year-old woman visited us desiring to conceive. The patient had got pregnant twice, but they resulted in spontaneous abortion. After her third miscarriage, chromosomal banding was performed and the patient was found to have a mosaic chromosome complement (45,X [9]/46,XX [21]). We report an extremely rare case of a patient with mosaic Turner syndrome who presented with typical clinical symptoms of adenomyosis.

**Key words:** adenomyosis, dysmenorrhoea, hypermenorrhoea, mosaic Turner syndrome.

## Introduction

Adenomyosis has been reported only in one patient with Turner syndrome and, in this case, adenomyosis was confirmed in histopathological examination of a myomectomy specimen [1]. This patient showed hypermenorrhoea and subsequent severe anaemia. However, these symptoms were not due to adenomyosis, but to a uterine fibroid. On the other hand, as for endometriosis, 7 cases of Turner syndrome in patients having endometriosis have been reported [2]. Thus, it is extremely rare for Turner syndrome patients to present with symptoms typical of adenomyosis – namely, an enlarged uterus and secondary dysmenorrhoea.

Natural pregnancies occur in at least 2% of women with Turner syndrome [3] and, to date, up to 160 spontaneous pregnancies in 74 women have been recorded [4]. Most had a mosaic Turner's karyotype containing a 46XX line, although some had non-mosaic Turner syndrome [5]. We report here adenomyosis in a patient with mosaic Turner syndrome with a history of severe dysmenorrhoea and three miscarriages.

## Case report

The patient, a Japanese woman, presented initially to our hospital at the age of 40 years; her primary complaint was infertility. Pubertal development of pubic and axillary hair, secondary sex characteristics, and breasts were apparently unremarkable. After her menarche at 12 years of age, the patient experienced regular menstrual cycles at a frequency of 30 days. Her height was 163 cm and body weight was 54 kg. She had no abnormal physical findings, including short stature, webbed neck or

shield chest. She has had a regular menstrual cycle since her menarche. She was nulliparous, as her prior pregnancies resulted in spontaneous abortions at 6 and 7 weeks of gestation. After her third miscarriage, chromosomal banding was performed. The patient was found to have a mosaic chromosome complement (45,X [9]/46,XX [21]) and was diagnosed with mosaic Turner syndrome.

Gonadotropin levels were normal [follicle-stimulating hormone (FSH), 7.16 IU/l luteinizing hormone (LH), 3.12 IU/l]. Cancer antigen-125 (CA-125), which is elevated in association with some cancers and other benign conditions, such as endometriosis and adenomyosis, was high (256 IU/l). Severe iron deficiency anaemia, as evidenced by a haemoglobin (Hb) concentration of 8.7 g/dl, was present. Transvaginal ultrasound examination revealed an enlarged uterus (145 × 99 × 100 mm) with extreme hypertrophy of the anterior and posterior uterine walls. In November 2004, the patient underwent a magnetic resonance imaging (MRI) scan of the pelvic cavity. Several findings typical of adenomyosis were evident as follows: a) enlargement of the uterine wall with diffusing foci of hyperintensity on the T2 weighted scans, b) small cystically dilated glands, c) more acute sites of microhaemorrhages (Figure 1). The pelvic cavity MRI image of the patient shown in Figure 1 is characteristic of adenomyosis. Because of her severe dysmenorrhoea and anaemia, treatment of the adenomyosis with gonadotropin-releasing hormone analogue (GnRH-a) was recommended, but the patient refused treatment with GnRH-a because of her desire to conceive.



**Figure 1.** T2-weighted midline, sagittal magnetic resonance image. Findings typical of adenomyosis are evident: a) enlargement of the uterine wall with diffusing foci of hyperintensity, b) small cystically dilated glands, c) more acute sites of microhaemorrhages. White arrows show small cystically dilated glands

## Discussion

Turner syndrome occurs at a frequency of approximately 50 per 100 000 females, and is the most frequent common chromosomal aberration in females. This syndrome is characterized by the complete or partial absence of one X chromosome. The most frequent chromosomal constitution is 45X [6]. About a half of such patients have a mosaic chromosome component. The most common is 45X/46XX (15%), and 6% of patients have 46XXq or 46XXp deletions. Thus, the syndrome could be the result of a limited amount of genetic material in these abnormal chromosomes [7].

Turner syndrome is characterized by the physical finding that often includes congenital lymphedema, short stature, and gonadal dysgenesis [8]. However, most patients with mosaic karyotypes have ovaries with a relatively low number of follicles [9]. There are some correlations between karyotype and phenotype [8]. Patients with a karyotype of 45,X/46,XX are the most likely to have spontaneous menarche and fertility, and they are marginally taller than other women with Turner syndrome as a group. Nonetheless, phenotype is unpredictable based on karyotype only. In our case the patient had a common mosaic chromosomal complement in mosaic Turner's syndrome (45X/46XX). 40% of them have spontaneous menarche and usually early ovarian failure, but she had both ovaries with the normal number of antral follicles by transvaginal ultrasound examination. She did not show the typical Turner syndrome in clinical symptoms, but the rate of 45X cells was 30% and ruled out common low-level sex chromosome mosaicism detected in phenotypically normal women.

Only one case of adenomyosis in a patient with Turner syndrome who was not receiving long-term hormone replacement therapy has been reported [1]. In that report, the patient was a 31-year-old woman who had been diagnosed with mosaic Turner syndrome by cytogenetic examination of her lymphocytes. She had received several cycles of hormone replacement therapy during adolescence, but had not received GnRH-agonist treatment. Because of the patient's severe anaemia, a myomectomy was performed, revealing not only a uterine leiomyoma, but also adenomyosis in the post-operative histological examination.

In contrast, the patient described in this case report was a 40-year-old woman who presented with a chief complaint of infertility. Adenomyosis was not confirmed histopathologically, but clinical features and MRI findings, which indicated uterine enlargement and diffusing foci of hyperintensity on the T2-weighted scan, were consistent with adenomyosis. The patient's chromosomal pattern was 45X/46XX, which is the most common form of mosaic Turner syndrome. Adenomyosis is an

oestrogen-dependent disease. If the oestrogenic condition was maintained, it would cause oestrogen-dependent disease, such as adenomyosis and endometriosis, even in patients with mosaic Turner syndrome. The patient did not have any of the characteristic physical features of Turner syndrome, such as short stature, webbed neck and shield chest. The patient had normal pubertal development of pubic and axillary hair, secondary sex characteristics and breast development. After spontaneous menarche at 12 years of age, the patient had regular and normal ovulatory menstrual cycles. Surprisingly, the patient three times became pregnant – at 38, 39 and 40 years of age – but, unfortunately, these pregnancies ended in miscarriages. Conception is very rare in patients with mosaic Turner syndrome; among women with Turner syndrome who become pregnant, the rates of miscarriages (29%), stillbirths (7%) and malformation (20%) also are very high [2, 3].

Thus, it appears that the only symptom of mosaic Turner syndrome exhibited by the patient described in this report was her miscarriage. Spontaneous abortion may result from fetal chromosomal aberrations due to maternal translocation. From this point of view, the patient described in this case report would be an ideal candidate for pre-implantation genetic diagnosis (PGD). However, in Japan PGD is permitted only for Duchenne dystrophy and is prohibited by the Japan Society of Obstetrics and Gynecology for repeated spontaneous abortions, even though caused by maternal chromosomal abnormalities. Therefore, PGD was not performed for this patient.

Because the patient suffered from hyper- and dysmenorrhoea, resulting in severe anaemia, several treatment alternatives were recommended, including a GnRH-agonist, oral contraceptives, or hysterectomy. However, because of the patient's strong desire to conceive none of these treatments was acceptable.

A strategy for maintaining fecundity in patients diagnosed with Turner syndrome during adolescence is needed. For this purpose several types of assisted reproductive technology, not oocyte donation and ovarian surrogacy, but, rather, cryopreservation of ovarian tissue, in vitro maturation of immature oocytes and ovarian tissue transplantation techniques are indispensable. In the near future it will be possible for more patients with Turner syndrome to bear children.

In conclusion we report an extremely rare case of a patient with mosaic Turner syndrome who presented with typical clinical symptoms of adenomyosis, such as dysmenorrhoea and uterine enlargement. An alternative condition seems to be that even though it is extremely rare, dysmenorrhoea and anaemia may be symptoms of adenomyosis in women with Turner syndrome.

## References

1. Ferrero S, Bentivoglio G. Adenomyosis in a patient with mosaic Turner's syndrome. *Arch Gynecol Obstet* 2005; 271: 249-50.
2. Lazovic G, Spremovic S, Cmiljic I, Vilendacic Z, Milicevic S. Endometriosis in a woman with mosaic Turner's syndrome: case report. *Int J Fertil Womens Med* 2006; 51: 160-2.
3. Hovatta O. Pregnancies in women with Turner's syndrome. *Ann Med* 1999; 31: 106-10.
4. Tarani L, Lampariello S, Raguso G, et al. Pregnancy in patients with Turner's syndrome: six new cases and review of literature. *Gynecol Endocrinol* 1998; 12: 83-7.
5. Abir R, Fisch B, Nahum R, Orvieto R, Nitke S, Ben-Rafael Z. Turner's syndrome and fertility: current status and possible putative prospects. *Hum Reprod Update* 2001; 7: 603-10.
6. Thompson MW, McInnes RR, Willard HF. The sex chromosomal and their abnormalities. In: Thompson MW, McInnes RR, Willard HF (eds). *Genetics in Medicine*. Philadelphia: WB Saunders, 1991; 239-43.
7. Turner C, Dennis NR, Skuse DH, Jacobs PA. Seven ring (X) chromosomes lacking the XIST locus, six with an unexpectedly mild phenotype. *Hum Genet* 2001; 106: 93-100.
8. Virginia PS, McCauley E. Turner's syndrome. *N Engl J Med* 2004; 351: 1227-38.
9. Novak AZ, Kokai GK, Popovic VP, Ludoski MD, Jurukovski VA. Interphase cytogenetics on paraffin-embedded sections of ovary for detection of genomic constitution in a patient with Turner's syndrome and chromosomal mosaicism. *Hum Genet* 1995; 95: 293-8.