International Journal of Medical and Health Research
www.medicalsciencejournal.com
ISSN: 2454-9142
Received: 23-07-2024, Accepted: 22-08-2024, Published: 06-09-2024
Volume 10, Issue 5, 2024, Page No. 23-25

Myomatous erythrocytosis in uterine fibroid

Dr. Kanika Sharma[1], Dr. K D Nayar[2]
[1] Department of Obstetrics and Gynaecology, Akanksha IVF Centre, Mata Chanan Devi Hospital, Delhi, India
[2] Chief Consultant and HOD, Department of Obstetrics and Gynaecology, Akanksha IVF Centre, Mata Chanan Devi Hospital, Delhi, India

Abstract
Myomatous Erythrocytosis Syndrome is defined as erythrocytosis, myomatous uterus, and the return of normal hematologic values following surgical resection.The triad of a myomatous uterus, erythrocytosis, and restoration of normal hematologic parameters following surgical resection such as hysterectomy or myomectomy is characteristic of a rare entity called Myomatous Erythrocytosis Syndrome. The first reports of these conditions were by Thomson and Marson in 1953 [1].

Keywords: Non-formal education, illicit drugs, antidote

Introduction
Uterine fibroids occur in approximately 50% of women over the age of 40 years, and an estimated 50% of those are symptomatic.
Myomas can be classified as Subserosal myomas, Intramural myomas, Submucus myomas. The triad of a myomatous uterus, erythrocytosis, and restoration of normal hematologic parameters following surgical resection such as hysterectomy or myomectomy is characteristic of a rare entity called Myomatous Erythrocytosis Syndrome.The exact pathogenesis of this disease is unknown. However, there have been published case reports since then examining various hypotheses, which we will discuss here.

Case presentation
Case report
65 yr old, P3L3 with previous all normal vaginal deliveries Post Menopausal women patient came with chief complains of Pain in abdomen since 21 days.
Patient was hypertensive since one year and was taking tab. amlodipine 5 mg twice a day.

On examination
She was well built and well nourished.
BP-110/70 PR-78/MIN
CVS: S1, S2 Normal, No Murmurs
RS: AEBE,
CNS: NAD

Her per Abdomen Examination
Soft, non tender
Firm Mass palpable about 28wks size, mobile

On Per Speculum Examination
Cervix and vagina healthy

On Per Vagina Examination
Mass of 28wks size, mobile
Uterus size could not be assessed.
B/L fornices nontender
B/L adnexa not distinguished well.

Investigations
HB- 21 gm/dl
RBC- 7.3 million cells/cumm
TLC-4000 cells/cumm
PLT- 1.7 lakhs
PCV-68.9%
PBS –Normocytic normochromic
Blood Group- B positive
Urine Analysis- normal
BSL (R)-98 GM/DL
HIV, HBsAg, VDRL- negative
PT-13.5. INR-1.1
Liver function tests-WNL
Erythropoietin Level 34.30 Mu/Ml
(3.7-31.5)
2D echo – normal study

USG ABD/pelvis
Uterus is grossly enlarged and shows a fibroid of size approx. 20cm x 11cm

CT scan
A large well defined, hypodense moderately enhancing solid lesion is seen arising from the fundus of the uterus, 22x12.5x17.4cm in dimensions.

MRI Pelvis
Large well defined lobulated solid mass lesion in pelvis measuring 23x 16x11cm.

Treatment
Total Abdominal Hysterectomy and Bilateral Salpingoopherectomy was done.

Intra Op findings
18x19 cm fibroid arising from fundus seen, dilated vessels were seen on the myoma.

Discussion
Thomson and Marson were the first to report erythrocytosis secondary to uterine myoma in 1953 [1] Uterine leiomyomas are benign tumours arising from smooth muscles cells of

uterus but contains varying amounts of fibrous tissues. Commonest presentation are, mass effect on pelvic organs and abdominal distortion. Problems associated with fibroids are ascites, uterine inversion, Polycythemia. Secondary polycythemia is one of the rarest association reported (0.5%). The role of erythropoietin has been suggested in the etiopathogenesis, both autonomic secretion by myomatous uterus or by the kidneys. Vascular shunts within the myoma and large uterine contribute to local tissue hypoxia which stimulates erythropoietin secretion. Menzies *et al* described compression of these uterine masses causing disruption of urinary flow leading to increased renal parenchyma pressure and erythropoietin stimulation, or even compression of renal vessels leading to renal hypoperfusion and erythropoietin secretion [2]. Paranjothy *et al* also attributed the increased size of uterine myomas to causing pressure on the diaphragm leading to hypoxia and subsequent increase in erythropoietin production [3]. This theory, however, was aborted since many patients with this condition did not show any signs of hypoxia or abnormal pulmonary function tests [4]. Production of erythropoietin happens mainly in the renal cortex and is involved in survival, growth, and differentiation of progenitor cells of the erythroid lineage. The first time the theory of uterine myomas producing excess erythropoietin was proposed in 1955 [5]. In 1968, Hertko *et al*. was the first one to discuss increased radioactive iron incorporation in a hypoxic polycythemic mouse [6, 7]. Wrigley *et al*. later confirmed this using a 2-dose level radioactive iron assay in 1971 [8] since then, many have shown increased erythropoietin activity in uterine myoma tissue. Among them, Yoshida *et al*. demonstrated positive immune-staining for erythropoietin in the cytoplasm of leiomyoma cells [9]. Erythropoietin produced directly by uterine myoma tissue has also been demonstrated by Kohama *et al*. who used reverse-transcriptase polymerase chain reaction and Southern blot method to detect erythropoietin Mrna in myomatous tissue [5, 10]. There is some *in-vivo* experimental data to suggest that estrogen plays a role in stimulating the erythropoietin/erythropoietin-receptor ignalling pathway causing increased angiogenesis, which is important in the development of this syndrome [11]. Literature review showed associated cases of erythrocytosis with leiomyoma of the esophagus and cutaneous leiomyoma, bringing up the theory of myoma cells itself being responsible for inappropriate erythropoietin secretion, regardless of its location.Apart from confirming erythropoietin production by myomatous tissue, Fabrizio Pollio and colleagues found a strong Epo-R expression in myoma endothelial cells, leading to the theory that erythropoietin production from uterine myoma not only contributes to erythrocytosis, but also stimulates proliferation and differentiation of myoblasts through autocrine and paracrine mechanisms leading to the large myomatous size almost always seen in this condition [12].

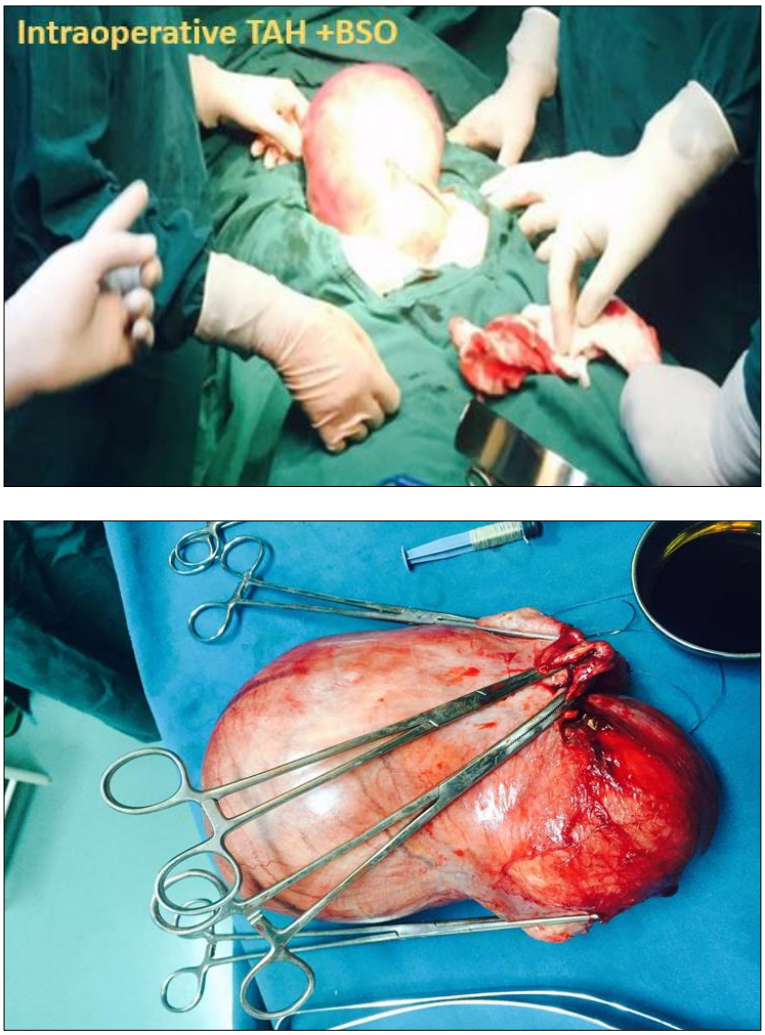

Fig 1: Specimen of uterus with cervix and fibroid

Conclusion

Uterine fibroid is one of the commonest pelvic tumours that can be associated with unusual presentation. Polycythemia is one among them. This underlines the importance of thorough physical examination including review of other systems to rule out paraneoplastic manifestation.

References

1. Polycythemia with fibroids. Thomsen AP and Marson FGW. The Lancet,1953:2:759–760.
2. Fibromyomata and polycythemia. Menzies DN. J Obstet Gynec Brit Comm,1961:68:505–509.
3. Polycythemia associated with leiomyoma of the uterus. Paranjothy D, Vaish SK. J Obstet Gynec Brit Comm,1967:74:603–605.
4. The myomatous erythrocytosis syndrome: a review. LevGur M, Levie MD. Obstet Gynecol,1995:86:1026–1030
5. Polycythemia associated with uterine myomas. Horwitz A, McKelway WP. JAMA,1955:158:1360–1361.
6. Giant uterine fibromyoma producing secondary polycythemia. Clark CL, Wilson TO, Witzig TE. Obstet Gynecol,1994:84:722–724.
7. Polycythemia (erythrocytosis) associated with uterine fibroids: a case report with erythropoietic activity demonstrated in the tumor. Hertko EJ. Ann Intern Med,1968:68:1169.
8. Secondary polycythaemia due to a uterine fibromyoma producing erythropoietin. Wrigley PFM, Malpas JS, Turnbull AL, Jenkins GC, McArt A Br J Hematol,1871:21:555.
9. Erythrocytosis and a fibroid. Yoshida M, Koshiyama M, Fujii H, Konishi M. The Lancet,1999:354:216.
10. Large uterine myoma with erythropoietin messenger RNA and erythrocytosis. Kohama T, Shinohara K, Takahura M, Inoue M. Obstet Gynecol,2000:96:826–828.
11. The role of erythropoietin in regulating angiogenesis. Kertesz N, Wu J, Chen THP, Sucov HM, Wu H. Dev Biol,2004:276:101–110.
12. Erythropoietin and erythropoietin receptor system in a large uterine myoma of a patient with Myomatous erythrocytosis syndrome: possible relationship with the pathogenesis of unusual tumor size. Pollio F, Staibano S, Mansueto G, De Rosa G, Persico F, De Falco M, Di Lieto A. Hum Pathol,2005:36:120–127.