

Conservative management of cervical pregnancy with intramuscular administration of methotrexate and KCl injection: Case report and review of the literature

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Abstract

We report the case of a cervical pregnancy successfully treated with intramuscular injection of methotrexate (MTX) and intramniotic administration of potassium chloride. A 41-year-old woman was admitted to our Department with the suspicion of ectopic pregnancy. Transvaginal ultrasound revealed empty endometrial

cavity, gestational sac within the cervical canal and embryonic echo measuring crown rump length 1.5 mm. Serum beta human chorionic gonadotropine (β -HCG) was measured 28590 IU/L. No cardiac activity was detected. The diagnosis of a cervical pregnancy was made. Patient was treated with intramuscular administration of methotrexate (50 mg/m²) in combination with ultrasound-guided intramniotic injection of KCl (2 meq/mL). Gradual decrease of β -HCG levels as well as ultrasound observation of collapsed gestational sac was observed. No curettage was necessitated. Patient was discharged on day 10th and was set in follow-up on a weekly basis. β -HCG values were measured < 10 IU/L on 56th day after MTX administration. Intramuscular administration of MTX may be effective in treatment of cervical pregnancy without additional interventional measures.

Key words: Cervical pregnancy; Methotrexate; Effectiveness; Conservative treatment; Intramuscular

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Core tip: This case of cervical pregnancy is one amongst few treated successfully with intramuscular administration of methotrexate and intramniotic KCl, without demanding additional interventional treatment. Our paper also summarizes the basic conclusions about conservative treatment of cervical pregnancy, a challenging issue in which no consensus still exists.

Petousis S, Margioulas-Siarkou C, Kalogiannidis I, Karavas G, Palapelas V, Prapas N, Rousso D. Conservative management of cervical pregnancy with intramuscular administration of methotrexate and KCl injection: Case report and review of the literature. *World J Clin Cases* 2015; 3(1): 81-84 Available from: URL: <http://www.wjgnet.com/2307-8960/full/v3/i1/81.htm> DOI: <http://dx.doi.org/10.12998/wjcc.v3.i1.81>

INTRODUCTION

Cervical pregnancy represents < 1% of ectopic gestations with its estimated frequency ranging between 1:1000-1:18000 pregnancies^[1]. It consists a rather challenging clinical condition that may even lead to life-threatening complications. Diagnosis is based on ultrasound imaging and may frequently present difficulties; however, it should be made as early as possible in order to avoid the risk of severe vaginal hemorrhage which may even necessitate emergency hysterectomy^[2,3].

No consensus has yet been achieved regarding the optimal therapeutic approach of cervical pregnancy. Review of literature demonstrates lack of randomized clinical trials comparing the effectiveness of various therapeutic protocols as the rarity of cases poses reasonable scientific limitations. However, the trend of modern clinical practice is rather destined to conservative management mainly based on the usage of methotrexate (MTX)^[1,3,4]. MTX may be administrated intramuscularly (*i.m.*) or intramniotically (*i.a.*) and may also be combined with other therapeutic means, such as intramniotic administration of potassium chloride, vaginal mifepristone or uterine artery embolization (UAE)^[4-11]. In any case, close follow-up is demanded in order to diagnose incompletely treated cases and perform additional interventions such as curettage, hysteroscopy or even hysterectomy^[7,12,13].

We present the case of a cervical pregnancy which was successfully treated with intramuscular injection of MTX plus intramniotic administration of potassium chloride, without necessitating further treatment with curettage. Furthermore, a narrative review is also provided regarding the various therapeutic options regarding the optimal treatment of cervical pregnancy.

CASE REPORT

A 41-year-old woman was admitted to our Department with the suspicion of ectopic pregnancy. The woman was followed-up by a private physician, being on her 54th day of amenorrhea, with reported beta human chorionic gonadotropine (β -HCG) ranging within normal values, based on her reported last menstrual cycle. Conception was reported to be spontaneous. The patient had an obstetrical history of three pregnancies, of which the first one was delivered vaginally and the consequent two with caesarean section. Regarding medical-gynecological history, patient reported no severe additional pathology. During her physical and gynecological examination patient was haemodynamically stable. Pelvic examination was normal and cervix itself was closed.

Transvaginal ultrasound imaging at the time of admission revealed empty endometrial cavity, gestational sac within the cervical canal and embryonic echo measuring CRL 1.5 mm (Figure 1). Cardiac activity was detected at the time of diagnosis. Serum β -HCG was measured 28590 IU/L, while no other remarkable findings were observed from her blood test examination. The diagnosis of a cervical pregnancy was therefore

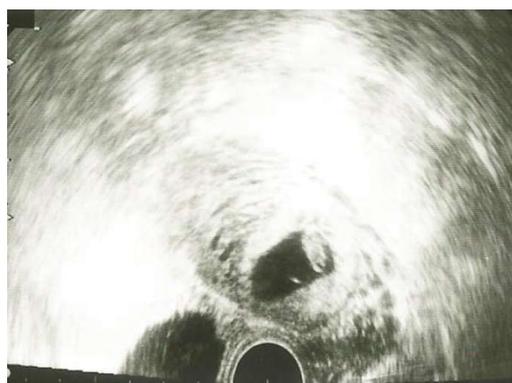


Figure 1 Ultrasound imaging of cervical pregnancy at the time of admission.

made and patient was hospitalized for further treatment.

Because of patient's stable clinical condition, without signs of vaginal bleeding or pain, patient was decided to be treated with intramuscular administration of methotrexate (50 mg/m²) in combination with ultrasound-guided intramniotic injection of KCl (2 meq/mL). Injection of KCl was well tolerated by patient without need for anesthesia administration, despite the presence of anesthesiologist during the whole procedure.

Considering that the day of medication was day 1, β -HCG was measured 25.100 IU/L on day 4, 8400 IU/L on day 7 and 1351 IU/L on day 10. Gradual decrease of β -HCG levels was also combined with ultrasound observation of collapsed gestational sac (Figure 2). No additional intervention such as curettage was decided to be performed. During hospitalization period, patient reported only minimal vaginal spotting, without reporting pain or other suspicious signs or symptoms and was therefore discharged on day 10th with the recommendation of follow-up on a weekly basis until β -HCG values are measured lower than 10 IU/L. She was also advised to use contraceptive methods of choice for the next 6 mo in order to avoid conception. Her follow-up period was totally uncomplicated, β -HCG values getting < 10 IU/L on 56th day after MTX administration. Patient was also reexamined 3 mo after cervical pregnancy diagnosis, the gynaecological examination revealing absence of residual pregnancy.

DISCUSSION

We described the case of a cervical pregnancy treated successfully with intramuscular administration of methotrexate and intramniotic injection of KCl, without necessitating additional interventional treatment.

MTX administration has been reported as an effective therapeutic option for the treatment of cervical pregnancy. However, there have been several therapeutic patterns proposed, without consensus regarding their comparative effectiveness. Ben Hamouda *et al*^[14] as well as Api *et al*^[15] have reported that exclusively single-dose intramuscular administration of MTX may be effective on treating cervical pregnancy without additional need for curettage^[14,15]. Intramuscular MTX may also be combined

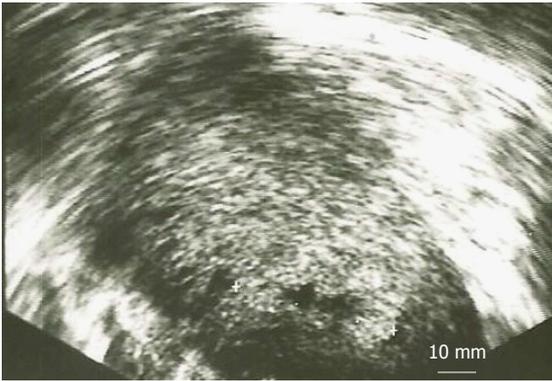


Figure 2 Ultrasound imaging of collapsed gestational sac after methotrexate treatment.

effectively with intramniotic injection of KCl^[4,16], while oral mifepristone may also be co-administered effectively as reported by Shrestha *et al*^[10]. Kochi *et al*^[17], in another case series including 4 cervical pregnancies, have also discussed the alternative of UAE with methotrexate, a method that has been reported to be effective either as monotherapy or in combination with other medication^[17]. Furthermore, apart from intramuscular injection and UAE, there is still the option of intramniotic (*i.a.*) administration of methotrexate either as mono-therapy or in combination with intramniotic injection of KCl, as characteristically described by Júnior *et al*^[5] in a series of 8 successfully treated cervical pregnancies^[5,18-20]. In our case, the choice of intramuscular administration of MTX was based on clinician's relative experience on this certain method of administration, given the fact of the non consensus of optimal method of treatment.

A basic endpoint of the present case report may be the fact that conservative management including *i.m.* MTX and *i.a.* KCl may be effective in treatment of cervical pregnancy without need for performing curettage. Indeed, effectiveness of exclusive administration of MTX has been reported to be as high as 81.3%, while the percentage is increased to 90% when MTX is combined with additional conservative methods^[2]. However, conservative treatment with MTX may not definitely exclude the possibility of incomplete treatment, with the underlying possibility of hemorrhage still being potential^[21]. Song *et al*^[8], in a retrospective study including 50 cases, report that out of 30 cases being treated with *i.m.* MTX, there were only 9 cases that did not necessitate further treatment with curettage^[8]. Cipullo *et al*^[22], in a case series including 5 cervical pregnancies treated with im MTX + UAE reported that, because of late diagnosis, emergency hysterectomy could not be avoided in a case^[22]. Furthermore, there are also reports of unsuccessful intramniotic MTX administration, such as that of Mangino *et al*^[11], in which hysteroscopy was finally performed in order to effectively treat cervical pregnancy^[11]. Pereira *et al*^[7] have also reported the case of a residual pregnancy 3 mo after *i.m.* MTX + *i.a.* injection of KCl + UAE, therefore demonstrating that close follow-up is demanded in order to confirm definite treatment^[7]. Thus, conservative treatment with

MTX should definitely be combined with close follow-up, including measure of serum β -HCG levels every 3 d after the initial *i.m.* administration and the possibility of additional 2nd or 3rd dose or even interventional treatment should always be re-evaluated in order to avoid risk of severe hemorrhage. Besides, non-conservative treatment has also been proposed as the basic therapeutic approach by other researchers with satisfying results^[23].

The most crucial point, however, regarding treatment of cervical pregnancy with MTX may be to identify patients eligible to be treated conservatively. MTX administration should be preferred in case of haemodynamically stable patients with unruptured ectopic pregnancy, without severe complaint for pelvic pain or vaginal bleeding and mainly in case the size of ectopic mass does not exceed 3-3.5 cm^[24,25]. Serum β -HCG levels should always be taken into consideration as there have been implications of improved correspondence in case β -HCG levels are lower than 5000 IU/L. Compliance of patient with close follow-up is also demanded while all potential risks and side-effects should also be explained to the patient^[26].

In conclusion, conservative treatment of MTX seems to be the most reasonable therapeutic approach in cases of early diagnosed cervical pregnancies. Intramuscular administration of MTX in combination with intramniotic KCl injection may be effective in the treatment of cervical pregnancy. However, further multi-center observational or even randomized studies should be performed in order to assess comparative effectiveness of various therapeutic protocols. Besides, the issue of cost-effectiveness of invasive *vs* conservative management, especially taking into consideration the follow-up necessitated after MTX administration, has to be further elucidated in order to achieve definite conclusions regarding a clinical entity that still poses severe diagnostic and mainly therapeutic challenges.

COMMENTS

Case characteristics

A 41-years-old woman on her 8th gestational week with the suspicion of cervical pregnancy.

Clinical diagnosis

No specific signs or symptoms during typical gynecological examination. Cervix closed.

Differential diagnosis

Other kinds of ectopic pregnancies.

Laboratory diagnosis

Beta human chorionic gonadotropine levels measured 28590 IU/L.

Imaging diagnosis

Empty endometrial cavity, gestational sac within the cervical canal and embryonic echo measuring CRL 1.5 mm.

Treatment

The patient was treated with intramuscular administration of methotrexate and intramniotic injection of KCl. No additional interventional treatment was performed.

Related reports

Successful conservative treatment of cervical pregnancy has been reported by only a few other studies. No consensus has yet been made regarding the various therapeutic options' comparative effectiveness.

Term explanation

Cervical pregnancy accounts for < 1% of ectopic pregnancies with frequency

between 1:1000-1:18000.

Experiences and lessons

Early diagnosis and close follow-up may permit successful conservative treatment with methotrexate, potentially avoiding curettage. However, the risk of severe hemorrhage should always been taken into consideration.

Peer review

This is an interesting study. The case report is well and clearly described and the discussion is concise.

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