Research Paper

Clinical Analysis of Pregnancy Outcomes in Individuals with Uterine Leiomyoma Treated with Pituitrin

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The presence of uterine leiomyoma may increase the incidence of complications such as premature delivery, miscarriage, abnormal fetal position and postpartum hemorrhage. Therefore, for these patients, the use of pituitrin needs to be particularly cautious. To study the effect of pituitrin on pregnancy outcomes of pregnant women with uterine leiomyoma of different sizes and sizes (uterine fibroids). A total of 193 single pregnancy patients with uterine fibroids admitted to the obstetrics department of the First Affiliated Hospital of Zhejiang Chinese Medicine University from January 2018 to July 2022 were selected, and their clinical data were retrospectively analyzed. According to the size of fibroids seen during pelvic color Doppler ultrasonography or intraoperation cesarean section during the third trimester of pregnancy, they were divided into 117 cases in the small fibroid group (<5 cm) and 76 cases in the large fibroid group (≥5 cm). Therefore, for the patients with pregnancy combined with uterine leiomyoma, the pregnancy outcome is affected by many factors. In addition to the use of pituitarin, they also include the age of the patient, the history of pregnancy, and the biological characteristics of the fibroids. When conducting clinical analysis, these factors need to be taken into account in order to reach a more accurate and comprehensive conclusion. Therefore, we need to pay attention to monitoring and preventing related complications during each pregnancy and delivery, so as to reduce the incidence of adverse outcomes, so as to provide a theoretical basis for obstetrical clinicians to manage pregnancy complicated with uterine fibroids in the perinatal period.

Key words: Uterine leiomyoma, pregnancy, obstetrics, pituitrin, postpartum hemorrhage, fibroids

Uterine leiomyoma is a more common disease in women and is strongly hormone-dependent. The incidence of uterine leiomyoma in women of childbearing age is as high as 25 %~30 %, and the actual incidence is higher because most of the patients with uterine leiomyoma are asymptomatic and insidious[1]. The phenomenon of uterine leiomyoma in pregnant women is also particularly common, and some scholars have reported that uterine leiomyoma can cause a significant increase in abortion, premature delivery and cesarean section. At the same time, complications such as abnormal fetal position, placenta previa and placental abruption during pregnancy and delivery will also be increased[2].

There are still many controversies about the specific mechanism of action of pituitrin in patients with pregnancy complicated with uterine leiomyoma and its influence on pregnancy outcome. On the one hand, pituitrin is widely used in the prevention and treatment of postpartum hemorrhage. By stimulating the contraction of the smooth muscle of the uterus, it contributes to the rapid rehabilitation of the uterus, thereby reducing the risk of postpartum hemorrhage. However, in patients with a pregnancy combined with uterine leiomyoma, this effect may be interfered with by the presence of the fibroids.

The fibroids themselves may cause abnormal contractions of the uterus, leading to an increased risk of premature birth or miscarriage. The use of pituitrin may further exacerbate this risk, especially if the fibroids are larger or more critically located. In addition, pituitrin may interfere with blood circulation to fibroids, leading to degeneration or necrosis, which can lead to more serious complications.

However, other studies have suggested that under close monitoring and proper dosage, pituitrin has a limited effect on pregnancy outcomes in women with uterine leiomyoma. These studies point out that

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pituitrin primarily acts on the uterine body and has less direct effect on fibroids. Therefore, as long as the dose and timing of the drug is well controlled, it can ensure that it effectively promotes uterine contraction while avoiding adverse effects on fibroids.

In addition to the use of pituitrin, the pregnancy outcome of patients with uterine leiomyoma during pregnancy is also affected by many other factors. For example, the older the patient, the higher the risk of complications; a history of multiple miscarriages or premature births also increases the risk of adverse outcomes in this pregnancy. In addition, the biological characteristics of the fibroids, such as their size, location, and growth rate, can also have an important impact on pregnancy outcome.

To sum up, there is still no conclusion on the pregnancy outcome of the use of pituitrin in patients with pregnancy combined with uterine leiomyoma. In future studies, it is necessary to further clarify the specific mechanism of action and safety of pituitrin in such patients, so as to provide more accurate and effective treatment recommendations for clinical practice. At the same time, it is also necessary to strengthen the monitoring and management of these patients during pregnancy, to discover and deal with possible complications in time, so as to ensure the health and safety of mothers and infants.

In addition, for patients with uterine leiomyoma during pregnancy, in addition to drug treatment, other treatment means can be considered. For example, for patients with larger or more critical fibroids, surgical treatment can be performed before or in the early stages of pregnancy to reduce the adverse effects of fibroids on pregnancy. At the same time, some non-drug treatment methods, such as traditional Chinese medicine acupuncture and physiotherapy, can also be tried to alleviate the symptoms of patients and improve the pregnancy outcome.

In short, the pregnancy outcome of patients with uterine leiomyoma is a complex issue that needs to take into account a variety of factors. In the future clinical practice, it is necessary to constantly explore and try new treatment methods and means, in order to provide more comprehensive and effective diagnosis and treatment services for such patients.

MATERIALS AND METHODS

General data:

A retrospective control study was used in this study. A total of 193 pregnant women with single pregnancy complicated with uterine fibroids admitted to the Department of Obstetrics, the First Affiliated Hospital of Zhejiang Chinese Medicine University from January 2018 to July 2022 were selected as the study objects. Among them, according to the size of uterine fibroids, they were divided into small fibroids group (<5 cm) and large fibroids group (≥5 cm). The 193 pregnant women ranged in age from 21 y to 45 y old, with an average age of (27.69±5.35) y. There were 115 primipara and 78 parturients and the mean gestational age of delivery was (33.75±6.07) w.

Inclusion criteria: Pregnant women with age >20 y old, single fetus, (28+6) w of gestation; pregnant women with at least 1 uterine fibroid indicated by color ultrasound and/or cesarean section before and/or during pregnancy were included in the fibroid group and complete clinical data.

Exclusion criteria: Pregnant patients with uterine fibroids hospitalized in this hospital during pregnancy, but no pregnancy outcome can be checked in this hospital.

Methods:

According to the pelvic color Doppler ultrasound or cesarean section during the third trimester and the size of uterine fibroids, the size of uterine fibroids was divided into small fibroids group (<5 cm) and large fibroids group (≥5 cm). In this study, the relevant case data were collected by retrospective analysis, including the general information of the pregnant women in the 2 groups, the information of complications during pregnancy and childbirth, the mode and management of delivery, the amount of postpartum bleeding, the presence or absence of fetal distress, and the information of newborn weight. After delivery of the fetus during labor, uterine contraction agents should be used in a timely manner, preferably long-acting and powerful drugs, such as carbetocin. If a cesarean section with myomectomy is required, pituitrin should be injected into the tumor before delivery.

In the study group, 175 pregnant women with uterine myoma were regularly examined in our hospital, and no serious complications during pregnancy, hypertension, diabetes, coronary heart disease and other major medical diseases were found. After admission, relevant auxiliary examinations were completed, such as blood routine, urine routine, stool routine, blood clotting, blood biochemistry, infectious diseases, glucose measurement, electrocardiogram,

obstetric B-ultrasound, fetal heart monitoring, etc., and the size of the pelvis was all measured within the normal range. In the study group, the amount of blood loss 2 h after delivery was compared (the amount of blood loss was calculated by volumetric method, gauze area method and weighing method.

Outcome of pregnancy, such as abortion, premature delivery, natural delivery and cesarean section, and fetal distress were observed in the two groups. The occurrence of adverse reactions such as fetal position abnormality, placenta previa, premature rupture of membranes, fetal distress, low birth weight and pregnancy complications were compared between the two groups. Fetal distress was mainly based on Apgar score (Apgar score refers to the evaluation score of 5 items 1, 5 and 10 min after birth, including respiration, heart rate, muscle tone, skin color and laryngeal reflex; each item is 0-2 points, with a maximum score of 10; 8-10 for normal newborns, 4-7 for mild asphyxia, 0-3 for severe asphyxia). Postpartum closely observe whether lochia dripping, whether there are bad signs of uterine involution, myomatosis, secondary infection, etc. At this time, it is necessary to promote uterine contraction and lochia discharge; breastfeeding and notice changes in body temperature and signs of abdominal pain.

Statistical methods:

Statistical Package for the Social Sciences (SPSS) 19.0 statistical software was used for data processing. Mean±standard deviation was used for measurement data and Chi-square (χ^2) test was used for comparison of counting data. Spearman rank correlation analysis was used for correlation among groups, and $p<0.05$ was considered statistically significant.

RESULTS AND DISCUSSION

Among the 193 patients with uterine fibroids, 15.54 % (30/193) were patients with abnormal fetal position, 13.47 % (26/193) were patients with placenta previa, and 56 (48.7 %) were diagnosed with uterine fibroids before pregnancy, of which 14 were diagnosed with uterine fibroids before pregnancy (16.9 %). The remaining 59 cases (51.3 %) were found during antenatal examination or cesarean section.

Through analysis, there were no statistically significant differences between the two groups in fetal position abnormality, placenta previa, premature rupture of membranes and pregnancy complications ($p>0.05$), including pregnancy complications such as hypertensive disease, gestational diabetes, pregnancy heart disease and so on as shown in Table 1.

There was statistical significance in the intrapartum and neonatal conditions between the two groups ($p<0.001$). The size of fibroids was related to the use of carprost trobutrin, postpartum hemorrhage and fetal distress as shown in Table 2.

Among the 193 patients, there were 8 early induced abortions and 3 middle induced abortions due to unplanned pregnancy and personal significance. In the other 7 cases, no clinical data could be found.

Among the 175 cases of pregnancy complicated with uterine fibroids, the mean gestational weeks of delivery were (35.40±3.17) w, including 117 cases in the small fibroid group, the mean gestational weeks of delivery were (36.22±2.77) w, and 76 cases in the large fibroid group, the mean gestational weeks of delivery were (34.52±3.32) w. In the large fibroid group, the gestational age of delivery was smaller in the large fibroid group ($p=0.002$). There was no significant difference in cesarean section rate between the two groups ($p=0.824$).

Before surgery, pituitarin was injected into the tumor. After myoma was removed from the intramural myoma, attention should be paid to hemostasis after suture. After surgery, uterine agents should be used, uterine hormone should be continuously dropped for (6-8) h, broad-spectrum antibiotics should be applied, infection prevention and control should be paid attention to, and anemia should be corrected as shown in Table 3.

Postpartum hemorrhage (bleeding volume ≥500 ml for vaginal delivery and ≥1000 ml for cesarean section). Univariate analysis showed that postpartum hemorrhage was not significantly correlated with the patient's delivery time ($p>0.05$), while delivery mode, fibroid location, whether carprost ambutol was used, and the number of fibroids were significantly correlated with postpartum hemorrhage. After delivery is prone to uterine contraction weakness massive bleeding, pregnancy should increase hemoglobin to >130 g/l, blood should be prepared during delivery, uterine contraction agents should be used in a timely way, it is best to use long-acting and powerful drugs, such as carbetocin, carprost ambutol injection, located in the lower uterine myoma after removal, When the mother does not have high blood pressure, she can use ergotrine to prevent postpartum bleeding as shown in Table 4.

Pregnancy complicated with uterine fibroids, the size of the fibroids is related to the use of carprost trobutanol, postpartum hemorrhage and fetal distress, and especially pregnancy complicated with large uterine fibroids, in the middle and late pregnancy, childbirth more complications, easier to increase the bleeding during labor, increase the use of carprost trobutanol, cesarean section rate. Among them, postpartum hemorrhage is not only related to the size of fibroids, but also significantly related to delivery mode, location of fibroids, whether carprost ambutol is used or not, and the number of fibroids. Pregnancy combined with uterine fibroids in puerperal period can occur poor uterine involution; lochia dripping, degeneration and necrosis of fibroids, there are also reports of secondary infection, diffuse intravascular coagulation, should be closely observed, timely treatment.

TABLE 1: PREGNANCY COMPLICATIONS IN PATIENTS WITH UTERINE FIBROIDS OF DIFFERENT SIZES (n, %)

Group	Number of cases	Abnormal fetal position	Placenta previa	Premature rupture of membranes	Complications during pregnancy
Microfibroid	117	10 (8.55)	18 (16.07)	9 (7.69)	22 (18.80)
Large fibroid	76	20 (26.32)	8 (10.53)	4 (5.26)	2 (2.63)
Total	193	30 (15.54)	26 (13.47)	13 (6.74)	24 (12.44)

TABLE 2: INTRAPARTUM AND NEONATAL CONDITIONS OF PATIENTS IN EACH GROUP (n, %)

Group	Number of cases	Carprost tramine use	Postpartum bleeding	Fetal distress
Microfibroid	117	46 (39.32)	7 (5.98)	45 (38.46)
Large fibroid	76	39 (51.32)	10 (13.16)	7 (9.21)
Total	193	85 (44.04)	17 (8.81)	52 (26.94)

TABLE 3: PREGNANCY OUTCOMES OF PREGNANT WOMEN IN THE TWO GROUPS (n, %)

Group	Number of cases	Miscarriage	Premature birth	Full-term birth	Cesarean Section	Low birth weight
Microfibroid	117	11 (9.40)	63 (53.85)	43 (36.75)	103 (88.03)	15 (12.82)
Large fibroid	76	7 (9.21)	48 (63.16)	21 (27.63)	68 (89.47)	26 (34.21)
Total	193	18 (9.33)	111 (57.51)	64 (33.16)	171 (88.60)	41 (21.24)

TABLE 4: RESULTS OF UNIVARIATE ANALYSIS AFFECTING POSTPARTUM HEMORRHAGE (n, %)

Categories	Postpartum hemorrhage (n=17)	No postpartum bleeding (n=176)	χ^2	p
Para			2.207	0.137
Primipara	13	102		
Multipara	4	74		
Method of delivery			7.681	0.006
Vaginal delivery	3	93		
Cesarean section	14	83		
Whether or not to use carprost ambutol			14.422	<0.001
Use carprost ambutol	3	114		

Carprost ambutol not used	14	62		
Number of fibroids			8.823	0.003
Single fibroids	2	82		
Multiple fibroids	15	94		
Fibroid location			18.69	<0.001
Lower uterine segment and cervix	11	28		
Body of uterus	6	139		
Fundus	0	9		

In short, uterine myoma is a benign tumor, although the chance of malignant change is not much, but must remember to send the disease examination after surgery. Preoperative should also carefully do a good job of doctor-patient communication; individual deep small fibroids are easy to miss diagnosis, an operation will not all clean up. For people who need to give birth, whether pre-natal surgery is needed should be weighed, if necessary, surgery should be as early as possible. Pregnancy, before delivery, puerperal period should be observed, actively respond to deal with, to prevent complications. Cesarean section whether to do myomectomy at the same time is controversial, should be decided according to the situation, should not be blindly implemented, should be fully prepared blood before surgery.

Uterine fibroids are the most common benign tumors of the female reproductive system, commonly seen in women aged 30 y to 50 y, of which pregnancy with uterine fibroids accounts for 0.5 %-1 % of patients with fibroids and 0.3 %-0.5 % of pregnancies[3]. In recent years, with the opening of triples, the improvement of people's living standards and the development of medical science, uterine fibroids have a trend of increasing year by year, and the incidence of pregnant women is gradually increasing with the corresponding age. In recent years, a number of domestic and foreign reports have shown that uterine fibroids are related to adverse pregnancy outcomes, and pregnant women with submucosal fibroids and intermuscular fibroids have an increased risk of obstetric complications[4,5], because with the enlargement of uterine fibroids, uterine fibroids can change the morphology of cervix, uterine cavity and fallopian tube opening, and uterine fibroids can also cause abnormal contraction of the uterus. It can cause infertility, abortion, placenta previa, abnormal fetal position (mainly breech), preterm birth, placental abruption, postpartum hemorrhage, etc., and even endanger the life of pregnant women. Therefore, for those with different sizes of uterine fibroids and high risk factors, screening, early detection and treatment should be carried out before pregnancy. Studies have shown that uterine fibroids can increase the rate of cesarean section, and the diameter of uterine fibroids >5 cm is associated with premature rupture of membranes[6], and may also cause complications such as postpartum hemorrhage and infection, which may affect maternal and child health in severe cases[7]. It has been reported that among infertile women, uterine fibroids as an independent factor of infertility account for 1 %-3 %[8], and recurrent spontaneous abortion accounts for 7 %[9]. Submucosal fibroids may reduce pregnancy rate and live birth rate due to their influence on uterine area and blood supply, while intermuscular fibroids may have adverse effects on fertility, while subserous fibroids do not affect pregnancy and abortion[10]. Pregnancy with uterine fibroids is considered to be a high-risk pregnancy category. Fibroids may increase rapidly in the first trimester[11], which may affect embryonic development and even cause abortion. During pregnancy, uterine blood supply is abundant, and fibroids are prone to complications such as red degeneration and infection. Under the influence of fibroids in the third trimester, fetal abnormalities may occur[12], mainly affecting fetal orientation and delivery mode. However, concerns about pregnancy complications should not be used as an indication for myomatectomy, unless the patient has a history of myomato-related pregnancy complications (grade III evidence)[13]. It has been reported that the incidence of various complications during pregnancy is significantly increased in patients with fibroids >5 cm in diameter, and fibroids increase the cesarean section rate.

Most studies have shown that there is no significant change in the volume of uterine fibroids during pregnancy[14,15], so it is necessary to conduct B-ultrasound examination for patients regularly in clinical practice to make a clear diagnosis. At present, the commonly used ultrasound methods are two-dimensional color ultrasound and Color Doppler Flow Imaging (CDFI). Some scholars have measured the volume of uterine fibroids during pregnancy by ultrasound and found that 31.6 % of the volume of uterine fibroids will increase during pregnancy, and the increase is mainly in the first 10 w of pregnancy[16]. Fibroid degeneration is more common during pregnancy. Some studies have reported that the rate of red degeneration of uterine fibroids during pregnancy is about 40 %[17].

With the release of the third child, the number of pregnant women with uterine fibroids has increased year by year. How pregnant women with uterine fibroids give birth should have always been the focus of discussion among experts at home and abroad. There is no exact statistical data about the proportion of cesarean section and vaginal delivery in China. However, foreign studies have shown that appropriate selection of cesarean section within a certain range can reduce perinatal mortality[1]. Therefore, some scholars put forward that it is appropriate to control the cesarean section rate within 15 %. However, there are literature reports that the majority of patients undergoing cesarean section, but there are literature reports that the majority of patients undergoing cesarean section are primipara or Gestational Diabetes Mellitus (GDM), and the risk of postpartum hemorrhage and infection is higher than that of other types of pregnant women. If cesarean section is performed for pregnant women complicated with uterine fibroids, whether the intraoperative fibroid removal is also a controversial topic for a long time. One view is that fibroid removal should not be performed at the same time during cesarean section, because of the abundant uterine blood flow during pregnancy, the boundary of fibroids is blurred compared with non-pregnancy, the difficulty of surgery is increased, and intraoperative bleeding is significantly increased, and even due to uncontrollable massive bleeding, leading to hysterectomy. The other view is the opposite; after the delivery of the fetus is carried out myoma stripping, postoperative still need to closely observe the changes in the condition and monitor the vital signs and other conditions, if necessary to symptomatic treatment. At present, the literature at home and abroad is inconclusive on these two opinions. Wang *et al*.[18] believe that for pregnant women with uterine fibroids, when the diameter of the fibroids is ≤5 cm, cesarean section and myomectomy can be considered, while when the diameter of the fibroids is >5 cm, more intraoperative bleeding may be caused and the risk is greater, so cesarean section and myomectomy should not be recommended. Scholars like Li *et al*.[19] also reported the same as above[4]. Another view is that cesarean section combined with myoma removal is feasible[20-22], but the specific surgical methods need further research and discussion to ensure maternal and infant safety and reduce perinatal morbidity and mortality.

Due to the rapid enlargement of uterine fibroids during pregnancy and the obstruction of blood circulation in the fibroids, it is easy to cause uterine fibroid degeneration. Uterine fibroids do increase the rate of dystocia, cesarean section and preterm birth. Especially large submucosal fibroids and fibroids where the placenta attaches can lead to complications such as pain (myomatosis), vaginal bleeding, placental abruption, fetal growth restriction, and preterm birth. Uterine fibroids combined with pregnancy should be managed as high-risk women. The vast majority of pregnant women do not need special treatment, but the size of the fibroids, the relationship with the placenta, and the condition of the mother and child should be monitored regularly. When uterine contractions occur, bed rest and contraction inhibitors should be applied. Myomatous pain syndrome of pregnancy is the most common complication of pregnancy with uterine fibroids, including red degeneration of the fibroids, aseptic necrosis, malignant transformation and hemorrhagic infarction. For red degeneration of uterine fibroids, conservative treatment is preferred, including bed rest, fluid rehydration and general supportive treatment, antibiotics to prevent infection, contraction inhibitors in cases of uterine contractions, sedatives and analgesics if necessary. In China, it has also been reported that low-dose heparin (25 mg) in the treatment of red degeneration of uterine fibroids during pregnancy has achieved good curative effect, and the effective rate reached 95 % after 3 d of medication. If conservative treatment fails or the diagnosis is unclear, surgical exploration may be considered.

Uterine fibroids cause heavy menstruation, anemia and compression symptoms, but are not willing to surgical treatment, can consider drug treatment;

myomectomy or pre-treatment before hysterectomy to correct anemia, shrink the myoma and uterus; patients with uterine fibroids can use drugs to reduce the size of the uterus and the size of the fibroids before planning pregnancy to prepare for pregnancy, or after multiple uterine myomectomy to prevent the recurrence of the fibroids can be treated with drugs. The drugs used to treat uterine fibroids can be divided into two categories; one can only improve the symptoms of menorrhagia and cannot reduce the size of the fibroids, such as hormonal contraceptives, tranexamic acid, and Non-Steroidal Anti-Inflammatory Drugs (NSAID). The other class, both can improve the symptoms of anemia and reduce the volume of myoma, such as adenokinin release kinin activator (GnRH-a) and mifepristone.

In summary, there was no statistical difference between the two groups in fetal position abnormality, placenta previa, premature rupture of fetal membrane and pregnancy complications. The size of fibroids was associated with the use of carprost tropanol, postpartum hemorrhage and fetal distress. Univariate analysis showed that there was no significant correlation between delivery time and postpartum hemorrhage ($p>0.05$), but delivery mode, location of fibroids, whether carprost ambutol was used or not, and number of fibroids were significantly correlated with postpartum hemorrhage. Pregnancy complicated with uterine fibroids is more common. Attention should be paid to monitoring and preventing the occurrence of related complications during each pregnancy and delivery.

In short, the pregnancy outcome of patients with uterine leiomyoma is a complex issue, which needs to consider a variety of factors. The clinical management of this group puts higher demands on the medical team, both to ensure the safety of the mother and to maximize the health of the fetus. From the existing research, the size, location, number of fibroids and their relationship to the placenta may affect the course and outcome of pregnancy.

The size of the fibroids is a key factor. Larger fibroids may compress the uterine cavity, affecting the growth and development of the fetus, while also increasing the risk of preterm birth, abnormal fetal position, and postpartum bleeding. Smaller fibroids, though they may pose some risk, are relatively minor.

Location is equally important. Sub mucous fibroids located in the uterine cavity may have the most significant effect on pregnancy, as they may interfere with implantation of the embryo and placenta formation. In contrast, fibroids located in the myometrium or under the serous membrane, although they may also cause some impact on pregnancy, are usually not as serious as submucosal fibroids.

Quantity is also a factor to consider. Multiple uterine fibroids may increase the complexity and risk of pregnancy, especially if the fibroids are numerous and large.

In addition, the relationship of the fibroids to the placenta is an important variable. If the fibroid is located near or in close contact with the placenta, then it may affect the function of the placenta, thereby increasing the risk of pregnancy complications.

In future clinical practice, we really need to keep exploring and trying new treatment methods and means. This includes more aggressive and effective treatment of fibroids before pregnancy to reduce their impact during pregnancy; close monitoring of fibroid changes and the condition of the fetus during pregnancy so that possible problems can be detected and dealt with in a timely manner and timely follow-up and treatment of patients after delivery to prevent recurrence and deterioration of fibroids.

Through the comprehensive application of existing medical technology and means, combined with individualized treatment plan and meticulous clinical management, we are expected to provide more comprehensive and effective diagnosis and treatment services for patients with pregnancy and uterine leiomyoma. This will not only help to improve the pregnancy outcome of patients and improve the health level of mothers and infants, but also make positive contributions to the development and progress of obstetrics and gynecology medicine. Of course, the realization of this goal requires the joint efforts and collaboration of medical teams, patients and all parties in society. We look forward to seeing more research results and the accumulation of clinical practice experience in the days to come, so as to bring better hope and prospects for such patients.

Conflict of interests:

The authors declared no conflict of interests.

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This article was originally published in a special issue, "Drug Discovery and Repositioning Studies in Biopharmaceutical Sciences" Indian J Pharm Sci 2024:86(4) Spl Issue "198-205"