

Gynecological Care and Contraception Considerations in Women with Cerebral Palsy

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Abstract

The purpose of this literature review is to further explore gynecological care and contraceptive use in women with cerebral palsy. More specifically, this article addresses barriers to pelvic examinations for cervical cancer screenings and current contraceptive methods in severely debilitated CP patients.

Keywords: Cerebral palsy; Gynecological care; Cervical cancer; HPV infection

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Introduction

Cerebral palsy (CP) is a condition caused by brain injury during central nervous system development, characterized by impairment in muscle, tone, posture and movement [1]. CP is classified according to functional impairment (**Table 1**) and can include central motor dysfunctions such as spastic, dyskinetic, mixed, ataxic, hypotonic, and regional distribution of affected function, such as hemiplegia, diplegia, and quadriplegia. Neurological complications associated with CP include seizures, cognitive impairments, neurosensory deficiencies, and growth retardation amongst others [2].

Gynecological concerns are of much relevance to women with severely debilitating cerebral palsy because women with disabilities are less likely to have recommended cancer screening [3]. While mortality from breast cancer is currently higher, cervical cancer previously the leading cause of cancer death in women [4]. The drastic reduction in both incidence and death rates from cervical cancer in the past few years has been largely attributed to organized screening with the use of Pap smears [3,5]. There are more considerable constraints to screening for cervical cancer due to the relatively invasive nature of the exam in women with disabilities due to physical and cognitive limitations, which may necessitate screening to be performed with an exam under general anesthesia. This may often be seen as an inconvenience to both the patient and the physician, and Pap smears are often deferred in this population with belief that these patients lack risk factors for development of cervical cancer [5,6]. Bridging the gap in cervical cancer screening for women with CP can prevent a source of unnecessary mortality.

Occurring simultaneously as cervical cancer screening is the pelvic exam, which can also be invasive and distressing for our CP patients. This exam can reveal any external abnormalities of the

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vulva and vagina. Further, a digital exam can reveal any palpable abnormalities of the uterus, cervix, fallopian tubes, or ovaries such masses. Adnexal masses, for example, can have a variety of etiologies not associated with sexual activity and should still be a consideration for CP patients. While cervical cancer poses the most significant risk for these patients, it is important to perform regular gynecologic exams in addition to the Pap smear.

Table 1: Gross Motor Function Classification System

Level I	Walks without limitations
Level II	Walks with limitations
Level III	Walks using a hand-held mobility device
Level IV	Self-mobility with limitations; may use powered mobility
Level V	Transported in a manual wheelchair

Additionally, contraception for menstrual management in women with CP offer reduction in hygiene issues, premenstrual symptoms, dysmenorrhea, heavy or irregular bleeding and conditions exacerbated by the menstrual cycle. However due to medication side effects and complexities involved in CP the method of menses suppression must be carefully considered.

As is expected with any such condition characterized by a constellation of possible symptoms, cerebral palsy patients have varying levels of severity to their condition and therefore gynecological care and menses management should be addressed on a case-by-case basis.

Discussion

Women with CP require the same primary and preventive reproductive health care that women without disabilities require [3]. Routine gynecologic screening, including Pap smears, in women with CP are often deferred by clinicians to avoid inconveniencing the patients whose severe disability precludes them from any sexual activity. In addition, such women are often nonverbal, wheelchair bound with severe motor restriction, and unable to understand the procedure, which may make pelvic exams and pap smears distressful and invasive, possibly necessitating general anesthesia to complete. Women with severe functional disabilities are 57% less likely to receive pap smears than women without disabilities [3,6,7]. The root of this fact is multifactorial with contributions from patient and caregiver compliance, healthcare gaps in our society for at risk populations, and provider confidence in caring for this special population. This healthcare disparity gap can only be closed with physicians understanding the need for and implementing routine screening even in such populations. Provider education and enhanced confidence with disabled populations can decrease the care gap observed.

Etiology of Cervical Cancer

Dismissing pap smears in women with CP may be justified by clinicians due to low risk of sexual activity and thus HPV exposure. HPV is a sexually transmitted infection that arises primarily through sexual skin to skin contact. However, HPV can be found in children prior to any sexual activity. Previous studies had established that about 40 different strains of HPV were responsible for 93% of cervical cancer cases, suggesting 7% of cervical cancers worldwide can still occur due to sporadic mutations or other triggers [8]. Other risk factors for developing cervical cancer are smoking, early age of coitus, or multiple sexual partners, oral contraception, weakened immunity (such as in HIV or autoimmune diseases), and diethylstilbestrol exposure [7,9]. While risk factors may be variable in women with CP as severity of functional limitations range on a spectrum, they are still nevertheless present; some women in this population may and do engage in sexual activity without proper sexual education, which can put them in high risk situations. In addition, disabled populations are at risk for sexual abuse, exposing them to possible HPV infection.

Sexual Abuse as an Avenue for Cervical Cancer Susceptibility

Studies surveying people with congenital disabilities found that they had decreased levels of sexual knowledge and experience compared to the average population, with the lowest scores seen in those with cerebral palsy. In those with severely debilitating CP who are thus sexually abstinent, there should theoretically be no exposure to HPV, a sexually transmitted virus. However, there is a possibility of sexual assault in such patient populations with perpetrators being caregivers in group homes, family members, or other acquaintances [10]. Women with cerebral palsy, just as other patients with disabilities, may be more vulnerable to sexual abuse because of dependence on others for intimate care, increased exposure to a large number of caregivers and settings, inability to defend themselves and seek help for or report abuse, and lack of ability to understand sexual education and be aware of sexual contact [11]. A survey examining over 7000 disabled people including those with CP found that about 40% had experienced sexual abuse [12].

Cervical Cancer Screening and Vaccine Recommendation in CP Patients

Women with CP face barriers to gynecological care due to inadequate office settings, lack of time required to compensate for the needs of the patient, and lack of skills and knowledge among providers. However, accommodations to improve comfort during gynecologic exams for these patients have been addressed. An initial visit reserved for patient and provider familiarization and understanding the special needs of the patient can be considered. Botox injections for muscle and pain control prior to examination and identifying optimal pelvic position that avoid stretching contracted muscles are also helpful interventions to consider [6,7]. When appropriate, exam under anesthesia may be planned to perform a pelvic exam and perform cervical cancer screening. However, the risks of recurring general anesthesia must be weighed against the patient's individual risk of cervical cancer. Ideally, other procedures, like dental or other maintenance exams, may be coordinated with other services and done concomitantly under the same anesthetic [3].

Ultimately these examinations should be addressed on a case-by-case basis, but awareness of both gynecologic barriers and possible accommodations can aid patients and providers in making these decisions. Regardless of cervical cancer screening, HPV vaccinations in children and adolescents with CP should be discussed and provided [13,14].

The Importance of Contraception in Women with CP

Women with CP may be perceived as being less sexually active than their peers without disabilities [15]. According to a 2013 Behavioral Risk Factor Surveillance System questionnaire, Women with disabilities had similar rates of sexual activity as women without disabilities (90.0% vs. 90.6%, $p=0.76$) [16]. Therefore contraception with patients and their providers should be addressed.

Table 2: Methods of Contraception

Method	Benefits	Disadvantages
OCP	Reduces menstrual flow and dysmenorrhea, Reduces ovarian, endometrial, colorectal cancer	Venous thromboembolism, Required daily intake, Breakthrough bleeding, Risk of cervical and intrauterine cancers, Interaction with anticonvulsants
Contraceptive patch	Same as OCP Weekly transdermal application	Same as OCP Skin irritation, Patient removal
Contraceptive ring	Same as OCP Monthly administration	Same as OCP Difficult placement
Oral progesterone	Safe for contraindications to estrogen	Daily administration, Weight gain, Breakthrough bleeding
Intrauterine Device	5 year effectiveness Progressive reduction in menstrual flow and pain, Amenorrhea in 50% patients within 1 year	Requires insertion with post-operative ultrasound for placement Uterine length criteria
DMPA	10-12 week administration Amenorrhea in 50% patients within 1 year, Safe for contraindications to estrogen	Injection administration, Breakthrough bleeding, Weight gain, Reduced bone mineral density
Implants	3 years	Irregular bleeding, insertion issues

In addition to increased risk of sexual abuse and unwanted pregnancy in women with CP, contraception medications are also useful for menstruation management and suppression to achieve therapeutic amenorrhea. The impact of menses in these patients range from typical symptoms of bloating, nausea and vomiting, migraines and cyclic exacerbation of seizures. Additional management challenges include increased spasticity and incontinence during menstruation, hygiene concerns, emotional and behavioral mood changes involving aggression or even self mutilation, parental and caregiver burden, and inability to participate in daily activities due to inadequate assistance (such as school) [17]. The goal of therapeutic amenorrhea is to reduce morbidity and improve quality of life for women with CP. This can prove challenging as no contraceptive method can be consistently relied upon to produce amenorrhea. In a large cohort study, it took patients an average of cycling through 1.5 contraceptive options before finding one that was moderately efficacious for their respective needs [18].

Problems with Contraception in Disabled Populations

The efficacy and drawbacks of specific types of contraception in CP is still an area in medicine that has not been widely studied. This is partially because contraceptive options have only recently become a popular therapy within this patient population and each mode of contraception varies based on specific disability. It is important to take careful assessment of each contraceptive class most widely used in disabled populations [19,20].

The depot medroxyprogesterone acetate (DMPA) injection is a common option for women with CP because of its quarterly administration and increase in seizure threshold. Although good for non-compliant patients, this contraceptive method increases the risk of osteoporotic fracture in patients with CP.

These patients are often immobilized and have an increased propensity to develop osteopenia and osteoporosis. Although it is known that progestin only contraception is correlated with osteoporosis, disabled women were significantly more likely to receive the progestin injection compared to women without disabilities (14.7% vs. 4.3%, respectively, $p < 0.001$). Patients who receive DMPA carry an increased risk for **osteoporotic fracture** with an odds ratio of 2.4 (CI 95%, 1.3-4.4) for fracture compared to non-users [9]. In addition, this medication is associated with weight gain, not only leading to comorbidities associated with obesity but also increased difficulty for ambulation or transport in patients that are already wheelchair bound (Table 2) [20].

Combined oral contraceptives (OCP's) are also widely used in patients with disabilities. Although this class of contraception has many proven benefits, it is associated with venous thromboembolism which is of concern in wheelchair bound CP patients. In addition, compliance can be an issue in CP patients with difficulty swallowing.

Patients with CP are often times prescribed anti-epileptics which can have drug-drug interactions with oral combined contraceptive pills. Combined OCPs have a major contraindication with anticonvulsants such as carbamazepine, topiramate, and valproic acid. Anticonvulsants induce the activity of hepatic CYP450 enzymes, decreasing plasma concentrations of combined OCP. This may lead to increased incidence of unwanted pregnancy in this patient population [6,20].

In addition, it is well understood that combined oral contraception is correlated with an increased risk of developing cervical intraepithelial neoplasia and invasive cervical cancer. This is concerning because women with disabilities are already less likely to receive gynecologic screening such as pap smear and Human Papilloma Virus co-test screening [6].

Levonogestrel Intrauterine Devices (IUD) is currently considered to be the most efficacious contraceptive option in preventing unwanted pregnancy. It is currently thought that although it may be a great choice for the general populous, insertion of the device can cause significant pain for some patients. In women with CP, there is generally a great amount of emotional and physical distress associated with speculum examinations and procedures. As a result, these procedures often must be done under general anesthesia, which contributes to increased morbidity and poses the potential for significant health risks for the patient [6,20].

Use of Progestin implants may share some of the same concerns as the intrauterine device. Because the device is subcutaneous, the patient must be a cooperative and willing participant during the procedure, which may be difficult for some individuals with disabilities. In addition to implantation issues, amenorrhea is achieved in only 13% of patients, proving to be a poor solution to symptoms such as dysmenorrhea and menorrhagia [21].

The Combined Contraceptive patch serves as a great contraceptive method for patients who have dysphagia. It is a poor choice for patients with behavioral issues who may tend to want to pull off the patch. In these cases, the patch may be placed in areas that aren't readily assessable, such as the upper back and above the buttocks [22].

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Ablation and Hysterectomy

Surgical intervention methods of contraception such as ablation and hysterectomy serve as another contraceptive option in women with CP. Implementation of these options must be assessed on a case-by-case basis, carefully taking into account ethical concerns such as patient autonomy and the principle of nonmaleficence. In addition, we must carefully evaluate these options due to the long-standing practice of sterilization [22]. Hysterectomies are considered a last resort and present many ethical concerns.

Conclusion

Women with CP require the same primary and preventive reproductive health care that women without disabilities require. Unfortunately, these patients are less likely to receive adequate gynecological care due to presumptions of their sexual activity and multiple comorbidities.

Medical care is often unique and individualized for this population. It should ideally comply with age-based recommended guidelines after attempting assessment of reproductive health risk and discussion with the patient and the caregiver. Physicians and office staff should tailor the care of women with CP to their needs and specific disability on a case-by-case basis.

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