Chronic Pelvic Pain in the Adolescent Differential Diagnosis and Evaluation

October 24, 2011 | Pelvic Pain [1], Laparoscopy [2], Integrative Medicine [3], Pregnancy and Birth [4], Infertility [5], Contraception [6], Young Women [7], ObGyn Compensation Survey [8]
By Geri D. Hewitt, MD [9] and Robert T. Brown, MD [10]

Chronic pelvic pain, a common complaint in female adolescents, is defined as cyclic or noncyclic, intermittent or constant discomfort in the pelvic region for at least 6 months. It often frustrates the patient, her parents, and her physician, and it can lead to major functional problems such as changes in family dynamics or school absenteeism.

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As time passes between symptom onset and diagnosis (and symptom relief), patient frustration may grow, possibly leading to "doctor shopping" and use of opioid analgesics. Thus, the physician should promptly address all of the female adolescent's pain symptoms and pain-related concerns. While searching for the source of the patient's chronic pelvic pain, the physician should investigate both organic and nonorganic factors. Thus, the work-up should include both a thorough physical exam and consideration of various psychological issues.

**BIOPSYCHOSOCIAL MODEL**

According to this model, the patient's perception of pain arises from a combination of nociceptive stimuli, her emotional state, and concomitant social determinants. This model explains the phenomenon of symptom shifting in patients with chronic pain syndromes: When nociceptive stimuli are removed without adequate attention paid to the patient's underlying psychological or social concerns, new symptoms arise at an alternate site. For example, a patient with chronic pelvic pain who undergoes surgery that alleviates her symptoms may go on to develop disabling headaches because her underlying emotional problems have not been adequately addressed.¹

As somatic, psychological, and social factors--either alone or in combination--usually play a role in chronic pain syndromes, each should be investigated from the outset. If the physician delays psychological evaluation until after ruling out organic disease, patients and their families are less likely to accept any potential nonorganic causes.² In a prospective, randomized trial, Peters and colleagues compared two groups of patients: those evaluated for psychosocial as well as organic causes of pain beginning with the first visit, and those evaluated for psychosocial causes only after organic pathology had been ruled out.³ Patients in the former group had better responses to therapy and better long-term outcomes.

**Table 1. Causes of Chronic Pelvic Pain in Adolescents**

| **Gynecologic** | congenital abnormalities, ectopic pregnancy, endometriosis, ovarian masses, pelvic adhesive disease, pelvic inflammatory disease |
| **Urologic** | interstitial cystitis, kidney stones, urethral syndrome, urinary tract infection |
| **Gastrointestinal** | appendicitis, constipation, gastroenteritis, hernia, inflammatory bowel disease, irritable bowel syndrome, lactose intolerance |
| **Musculoskeletal** | inflammation, joint pain, postural problems, spinal injury, trigger points |
| **Psychosocial** | abuse, depression, eating disorder, need for contraception, school avoidance, substance abuse |

**DIFFERENTIAL DIAGNOSIS**
The cause of chronic pelvic pain in an adolescent may be organic, nonorganic, or multifactorial (Table 1).

**Gynecologic Disorders**
These include endometriosis with or without Müllerian anomalies; adnexal lesions, such as ovarian masses or chronic ectopic pregnancy; infectious causes, such as pelvic inflammatory disease (PID) or tubo-ovarian abscesses; and pelvic adhesive disease.

**Urologic Diseases**
The most common urologic cause of chronic pelvic pain in adolescents is urinary tract infection. Although much less likely, kidney stones, interstitial cystitis, and urethral syndrome may also be responsible for the pain.

**Gastrointestinal Ailments**
Diseases of the lower gastrointestinal (GI) tract may present as chronic pelvic pain because the organs of the pelvis and lower GI tract share the same visceral innervation. Some of these disease processes may be revealed by the history and physical examination, whereas others may require radiologic or endoscopic evaluation. Constipation, which is often caused by poor diet or bowel habits and thus is common in adolescents, can be readily diagnosed with examination and abdominal films, and then corrected with hydration, dietary changes, and pharmacologic intervention if necessary. A careful dietary history may lead to the diagnosis of lactose intolerance or irritable bowel syndrome (IBS). Patients who suffer from IBS-related chronic pelvic pain are particularly prone to somatization, depression, and anxiety. Other GI-related causes of chronic pelvic pain are peptic ulcer disease, gastroenteritis, inflammatory bowel disease, chronic appendicitis, and hernias. The two lattermost conditions will require surgical consultation.

**Musculoskeletal Abnormalities**
Conditions of the musculoskeletal system that involve an increase in muscle tone (e.g., leg-length discrepancy, trigger points) can lead to chronic pelvic pain. In addition, structural abnormalities, injuries, or diseases of the lumbar spine, hip, or various muscles (e.g., abdominals, iliopsoas, quadratus lumborum, piriformis, obturator internus and externus) may cause pain that is referred to the lower abdomen or anterior thigh. This pain may fluctuate in severity over the course of the menstrual cycle because of the effect of varying levels of progesterone and relaxin on these tissues. Pain consistent with a musculoskeletal cause often changes in intensity and location with variations in posture or with specific activities. Poor posture or leg-length discrepancy can lead to chronic pelvic pain because of mechanical stress on joint capsules, ligaments, and muscles.

**Psychosocial Problems**
Chronic pelvic pain can also be psychosomatic in origin. Because her body is changing more rapidly than at any other time in her life, the female adolescent typically experiences a heightened awareness of bodily functions and sensations. In addition, the adolescent has a unique set of temporary stressors (e.g., school grades, social pressures, awakening sexuality) that can cause physical symptoms. More permanent stressors to which she may be exposed (e.g., parental divorce, past or present sexual abuse) may also produce troublesome physical symptoms, particularly if she cannot cope with these issues in a healthy fashion because of her temperament or because of the circumstances themselves. Coping style may also play an important role in the development of psychosomatic symptoms. Some adolescents cope actively with stress; if their home situation becomes intolerable, for example, they simply run away. Others cope passively, without exhibiting any overt reaction; they internalize their stress and develop chronic pain symptoms or fatigue. Other factors that affect an adolescent's ability to cope with stress include lifestyle and major life events. A pattern of regularity--the same meal schedule every day, regular exercise, the same wake-up time and bedtime every day--will likely help her cope more effectively with stress. In contrast, a chaotic schedule is likely to cause or aggravate problems. Major life events (e.g., death of a relative, moving, parental divorce, natural disaster) may also threaten an adolescent's ability to cope. Occurrence of two or more of these events within a short period of time substantially increases the risk of maladaptive coping and inducement of psychosomatic symptoms.

**EVALUATION**
History
Assessment of a patient with chronic pelvic pain begins with a thorough history that emphasizes duration and frequency of symptoms, location and severity of the pain, situations that exacerbate or relieve the pain, and past medications and therapies. The physician should inquire about whether other family members have similar symptoms; the patient's response to painful stimuli may be influenced by her observations of how other family members respond to pain. This symptom modeling is a well-known phenomenon of psychosomatic disease.

A prospective pain calendar may be useful in obtaining this information; the patient should also record information regarding her menses to reveal any cyclic component.

The history should focus on these specific areas:

- **Gynecologic**: age at menarche, sexual activity, exposure to sexually transmitted diseases, menstrual irregularities, pregnancy history
- **Urologic**: frequency of urination, dysuria, hematuria
- **Gastrointestinal**: dietary history, nausea or vomiting, bowel habits
- **Psychosocial**: history of depression, eating disorders, substance abuse; number of missed school days; coping style; presence or absence of major life changes.

In addition, past illnesses and surgeries, along with current medications, should be reviewed. The physician should also inquire about a family history of endometriosis; girls whose first-degree relatives have or have had the disease face an increased risk for developing it.  

Physical Examination
Chronic pelvic pain may arise from a variety of sources. To screen for musculoskeletal causes, the physician should examine the patient's posture for evidence of lordosis, one-legged standing, or leg-length discrepancy. The upper and lower back should be palpated while the patient is sitting. Once the patient is supine, leg flexion and head and leg raises should be done with abdominal-wall palpation. The physician should ask the patient to point to the area of greatest pain; typically, an adolescent whose pain is psychosomatic will have difficulty isolating a small area of pain origin.

The pelvic exam should focus on possible urologic and gynecologic causes. The physician should palpate the urethra and bladder base for specific tenderness, and the vaginal fornices for tenderness or masses. The uterus and adnexa can be evaluated on bimanual exam. The physician should also perform a rectal exam, particularly if a GI source or endometriosis is suspected. Detection of a large mass of soft stool or a wide rectal vault might suggest a diagnosis of constipation.

Laboratory Tests
These should include a complete blood cell count with differential, urinalysis, urine culture and sensitivity, and erythrocyte sedimentation rate. Cervical cultures and b-human chorionic gonadotropin measurement should be performed in sexually active patients. Considering the history and physical findings, the clinician may order other diagnostic tests. For example, a plain film of the abdomen is helpful if constipation is suspected. Transabdominal, transvaginal, or transrectal pelvic ultrasonography may be useful in patients with abnormal or equivocal findings on the physical exam. In adolescents with chronic pelvic pain, an abnormal finding on pelvic ultrasound has a 92.4% predictive value in confirming the abnormality at the time of laparoscopy (even though the abnormality may not be the source or cause of the pelvic pain).  

Abnormalities most commonly identified by ultrasound include adnexal masses (e.g., ovarian cysts, tubo-ovarian abscesses) or Mullerian abnormalities (e.g., bicornuate uterus). A normal finding on pelvic ultrasound is much less predictive (60%) of a normal pelvis at the time of diagnostic laparoscopy in the same patient population.  

As pelvic ultrasound cannot diagnose endometriosis, PID, or pelvic adhesive disease, a normal finding should not necessarily be the endpoint in the work-up.

Laparoscopy

### Table 2. Indications for Laparoscopy

- Chronic pelvic pain unresponsive to oral contraceptives and nonsteroidal anti-inflammatory drugs
- Diagnostic dilemma (e.g., suspected chronic pelvic inflammatory disease or appendicitis)
- Identified pelvic mass
• Painful irregular vaginal bleeding  
• Progressive dysmenorrhea

Safe and minimally invasive in adolescents, laparoscopy has become an important diagnostic tool in evaluating chronic pelvic pain in this patient population. The most common indications for a diagnostic laparoscopy include a mass identified by pelvic exam or ultrasound, progressive dysmenorrhea, chronic pelvic pain unresponsive to oral contraceptives or nonsteroidal anti-inflammatory drugs (NSAIDs), painful irregular vaginal bleeding, and any diagnostic dilemma such as suspected chronic PID or chronic appendicitis (Table 2).

Prevalence of identifiable pathology at diagnostic laparoscopy has ranged from 56% to 94% (Table 3). More recent studies report a higher prevalence of pathology—particularly endometriosis—which is most likely due to increased recognition of the appearance of this disease in adolescents, as well as more selective indications for laparoscopy. Other pathologic findings identified at diagnostic laparoscopy include pelvic adhesive disease, ovarian masses, ovarian torsion, appendicitis, Müllerian anomalies, chronic ectopic pregnancy, paratubal cysts, and PID.

### Table 3. Pathologic Findings on Laparoscopy

<table>
<thead>
<tr>
<th>Study</th>
<th>Positive Findings (%)</th>
<th>Negative Findings (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kleinhaus et al</td>
<td>95</td>
<td>44</td>
</tr>
<tr>
<td>Goldstein et al</td>
<td>86</td>
<td>14</td>
</tr>
<tr>
<td>Chatman &amp; Ward</td>
<td>88</td>
<td>12</td>
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<tr>
<td>Vercillini et al</td>
<td>60</td>
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<td>Reese et al</td>
<td>94</td>
<td>6</td>
</tr>
<tr>
<td>Laufer et al</td>
<td>89</td>
<td>11</td>
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Laparoscopy plays an important role in managing chronic pelvic pain, not only in confirmation of the diagnosis but also in surgical intervention, therapy, and patient reassurance. Most abnormalities identified can be surgically treated at the time of diagnostic laparoscopy; laparotomy or reoperation is rarely necessary. The value of a negative finding in providing reassurance to the patient and her parents should not be underestimated; if possible, pictures of the normal anatomy, including the uterus, fallopian tubes, ovaries, bladder, cul-de-sac, appendix, liver edge, and gallbladder, should be taken during the procedure and shared with the patient and her family for optimal reassurance. This is particularly helpful when treating the adolescent whose pain has a psychosomatic component.

In the past, endometriosis was viewed as a disease of women in their third or fourth decade of life. It was not until the 1970s that endometriosis was found to be a common cause of chronic pelvic pain in adolescents. In fact, most contemporary articles cite endometriosis as the most common finding at diagnostic laparoscopy in adolescent patients with chronic pelvic pain. Most patients with endometriosis report cyclic or acyclic pelvic pain as their chief complaint. Other common symptoms include dysmenorrhea, irregular menses, dyspareunia, abdominal pain and nausea, constipation and diarrhea, and urinary complaints. More than 90% of adolescents with endometriosis have diffuse or localized tenderness on physical examination.

Unlike older women, adolescents with endometriosis rarely have adnexal enlargement, cul-de-sac nodularity, or a fixed, retroverted uterus. Most adolescents in whom endometriosis is identified at laparoscopy are found to have stage 1 or 2 disease (based on American Fertility Society guidelines). Most endometriotic implants seen in adolescents are superficial red lesions thought to be precursors to the more typical black lesions seen in adults. Endometriosis has been diagnosed in patients as young as 11, even before menarche. Early identification and treatment of endometriosis not only improve quality of life but also lower risk for long-term sequelae such as pelvic adhesive disease and infertility.

**MANAGEMENT**

The underlying cause of chronic pelvic pain will dictate treatment. Regardless of the cause, the physician should offer symptomatic relief with NSAIDs. Even if no clear organic cause is found, simple measures such as applying heat to the abdomen, helping to regulate bowel movements, and
offering an exercise program can be effective in easing symptoms. At the first office visit, the physician should mention to the patient that the pain may be nonorganic (i.e., psychosomatic) in origin. That way, if organic causes are ruled out, the patient and her family will be more likely to accept referral to a psychotherapist.

CONCLUSION
By attending to the patient's symptoms and her family's concerns in a sympathetic and supportive manner, the physician can form a true therapeutic alliance that will facilitate her recovery, even if her symptoms do not subside completely. Combined with judicious use of diagnostic technology, this approach should enable the physician to successfully treat most adolescents with chronic pelvic pain.

References:

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