Original Article

Acute Pelvic Pain: Evaluation of 503 Cases

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Abstract

Aim: The aim of this study was to investigate the etiology according to the age groups (adolescent, reproductive, and perimenopausal / menopausal periods) of women who were admitted with complaints of acute pelvic pain (APP).

Materials and Methods: Data from 503 patients diagnosed with APP were evaluated retrospectively. The patients were divided into three groups according to their ages. The adolescent group consisted of patients who were 19 years of age and under (Group A), the reproductive age group consisted of patients who were between the ages of 20 and 44 years (Group B), and the perimenopausal / menopausal group consisted of patients who were at the age of 45 and above (Group C). The most common causes of APP among the three groups were investigated.

Results: The mean age was 29.9 ± 6.01 years. Gynecologic factors were present in 469 cases, APP was nongynecologic in nature in 24 cases, while the cause was unknown in 10 cases. The patients were evaluated in terms of APP duration, accompanying symptoms, and pain localization. There were 36 cases in the adolescent group, 361 cases in the reproductive age group, and 72 cases in the perimenopausal / menopausal group. Adnexal pathologies were the most commonly observed APP factor in all three groups.

Conclusion: APP was most commonly observed in the reproductive period, and adnexal pathologies and infections were etiologically prominent. Early and accurate diagnosis of APP will often enable more effective and conservative treatment methods for life-threatening pathologies.

Keywords: Acute pelvic pain, adnexal pathologies, etiologic factors

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Introduction

Acute pelvic pain (APP) is one of the most common complaints that gynecologists, general surgeons, and emergency service specialists encounter, and for female patients to visit the emergency service.[1,2] In general, APP is experienced in the lower abdomen or pelvis, and lasts less than three months.[3] APP is nonspecific, and can be confused with signs of many other diseases in terms of symptoms and findings. Ectopic pregnancy may present as a pelvic infection or adnexal torsion, which might affect fertility, as well as a life-threatening condition such as an ovarian cyst rupture. Adnexal pathologies are prominent in patients with APP complaints.[4–6] In order to better assess the potential for malignant adnexal masses with advancing age, advanced examination methods are required in addition to ultrasonography (USG).[4]

The purpose of this study was to investigate the etiologic factors that cause APP at different stages of lives of women (adolescence, reproductive age, and perimenopausal / menopausal periods).

Materials and Methods

The study group comprised of patients admitted to the Emergency Polyclinic of Izmir Ege (Aegean) Maternity and Gynecology Training and Research Hospital between the June 2008 and June 2011. Necessary approvals were obtained from the hospital management and Planning Coordination Board of Education for the study.

Files of patients with complaints of pelvic pain who were admitted to the hospital clinic for further investigation were accessed from computer records. The inclusion criteria consisted of onset of pain with duration less than three months, defined as acute-onset pelvic pain. Patients with APP related to normal pregnancy and delivery complications (abortions, postpartum endometritis, etc.) were excluded from the study, but ectopic pregnancy and complications were included. Patients' records were evaluated in terms of age, onset, duration and distribution of pain, accompanying symptoms, and factors associated with APP. Five hundred and three patients, who were diagnosed with APP and met the study criteria, were evaluated. The patients were divided into three groups: the adolescent group comprising of patients aged 19 and below (Group A), the reproductive age group including patients between the ages of 20 and 44 (Group B), and the perimenopausal / menopausal group consisting of patients aged 45 and above (Group C). Surgery decision for the patients with APP was given in case of; worsening of vital symptoms, nondiagnostic tests, and complications associated with significant degeneration of fibroids. Distribution of etiologic factors was generated according to age groups in descending order of frequency. Statistical analyses were made by SPSS.

Results

The mean age of all 503 cases with APP diagnosis was 29.9 ± 6.01. After 34 patients with non-gynecologic causes and undetermined etiology were excluded. The distribution of the remain-

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Table1. APP* age groups and APP factors (gynecologic and nongynecologic)

Diagnosis	Adolescent	Reproductive	Menopause	Total	Percent
Gynecologic					
Ovarian neoplasm	0 (%0)	1 (%0,27)	6 (%8,33)	7	1,49
Ovarian csyts	18 (%50)	133 (%36,84)	25 (%34,72)	176	37,53
Uterine fibroid	0 (%0)	27 (%7,47)	24 (%33.33)	51	10,87
Rupture of ovarian cysts	7 (%19,44)	41 (%11,35)	0 (%0.00)	48	10,23
Endometriosis	1 (%2,77)	29 (%8,03)	1 (%1.38)	31	6,61
Mullerian abnormality	2 (%5,55)	1 (%0,27)	0 (%0.00)	3	0,63
Primary dysmenorrhea	2 (%5,55)	2 (%0,55)	0 (%0.00)	4	0,86
Pelvic infection	3 (%8,33)	97 (%26,86)	15 (%20,83)	115	24,53
Ectopic pregnancy	1 (%2,77)	21 (%5,81)	1 (%1,38)	23	4,91
Ovarian torsion	2 (%5,55)	5 (%1,38)	0 (%0)	7	1,49
OHSS**	0 (%0)	4 (%1,10)	0 (%0)	4	0,85
Nongynecologic					
Acute appendicitis	8	6	1	15	44,11
Nephrolithiasis	0	3	1	4	11,76
İnguinal hernia	0	1	2	3	8,83
Colitis	0	0	2	2	5,89
Undetectable	5	3	2	10	29,41

*APP: Acute Petvic Pain; **OHSS: Ovarian Hyper Stimulation Syndrome

Table 2. The diagnosis distribution of operated cases with APP

Diagnosis	Adolescent	Reproductive	Menopause	Total	Percent
Ovarian neoplasm	0	1	6	7	6.86
Ovarian cysts	2	27	13	42	41.18
Uterine fibroid	0	5	3	8	7.84
Rupture of ovarian cysts	1	3	0	4	3.92
Endometriosis	1	5	1	7	6.86
Mullerian abnormality	1	1	0	2	1.96
Primary dysmenorrhea	0	0	0	0	0,00
Pelvic infection	0	6	1	7	6.86
Ectopic pregnancy	0	3	0	3	2.95
Ovarian torsion	2	5	0	7	6.86
OHSS	0	0	0	0	0
Appendicitis	8	6	1	15	14.71
Total	**15**	**62**	**25**	**102**	**100**

ing 469 cases of gynecologic etiology was as follows: 36 cases (7.67%) in Group A with a mean age of 15.1 ± 2.55 years, 361 cases (76.97%) in Group B with a mean age of 28.20 ± 5.70 years, and 72 cases (15.35%) in Group C with a mean age of 47.30 ± 7.35 years (Table 1). The patients had acute- or subacute- onset pelvic pain for a duration ranging from one to 13 days (average: 2.38 ± 2.06 days) prior to admission to the Emergency Polyclinic.

Localizations of pelvic pain in patients were bilateral (38.80%), in the right lower quadrant (23.80%), in the left lower quadrant (18.50%), suprapubic (10.40%), and diffuse (8.60%) (Table 2). The most common symptoms accompanying pelvic pain were weakness (31.40%), vaginal discharge (29.00%), dyspareunia (17.30%), nausea and vomiting (13.10%), and vaginal bleeding (9.20%).

Surgical techniques (laparotomy/laparoscopy) were utilized in the diagnosis and treatment of 102 cases (20.27%), while medical treatment and observation accompanied by physical examination, imaging, and laboratory findings were used in the remaining 401 cases (79.72%). The three factors for performing laparotomy or laparoscopy due to APP (in descending order of frequency) were ovarian cysts, cyst ruptures, and uterine myomas. Acute appendicitis was the primary nongynecologic APP, and laparotomies were performed at the general surgery clinic (Table 2). The most common APP causes in all of the groups were as follows (Table 3): ovarian cyst 50.00% [CI (95% Confidence Interval) 16.33(33.6 – 66.3)], ovarian cyst rupture 19.44% [CI (95% CI) 12.9 (6.48 – 32.32)], and pelvic infection 8.33% [CI (95% CI) 9.03(-0.7 – 17.36)] in the adolescent group (Group A); ovarian cyst 36.84% [CI (95% CI) 4.98(31.86 – 41.82)], pelvic infection 26.86% [CI (95% CI) 4.57 (22.29 – 31.43)], and ovarian cyst rupture 11.35% [CI (95% CI) 3.27(8.08 – 14.62)] in the reproductive age group (Group B); and ovarian cyst 34.72% [CI (95% CI) 11(23.72 – 45.72)], uterine fibroid 33.33% [CI (95% CI) 10.8(22.44 – 44.22)], and pelvic infection 30.83% [CI (95% CI) 9.38(11.45 – 30.21)] in the perimenopausal / menopausal group (Group C). The most common pathology for APP etiology among the groups was ovarian cyst. Ovarian neoplasm, uterine fibroid, and ovarian hyperstimulation syndrome (OHSS) were not observed in the adolescent group, while mullerian anomaly, ovarian cyst, ovarian cyst torsion, abortion, ovarian cyst rupture, and OHSS were not observed in the perimenopausal / menopausal groups. Six out of seven patients in whom ovarian neoplasms were observed (five epithelial and one sex chord stromal) were in the perimenopausal / menopausal group. Moreover, the final evaluation of the cases revealed that 24 cases (4.77%) were caused by non-gynecologic APP, while no causes were determined in 10 cases (1.99%), (Table 4). Nongynecologic APP factors could not be determined with clinical examination, laboratory tests, and imaging techniques, but were determined through consultations in relevant specialty areas.

Table 3. Frequency, percentage, and confidence interval (CI) of gynecologic causes of APP

	Adolescent (n = 36)		Reproductive (n = 361)		Menopause (n = 72)	
	n	CI (95%Confidence Interval)	n	CI (95%Confidence Interval)	n	CI (95%Confidence Interval)
Ovarian neoplasm	0	0,00 (0,00–0.00)	1	0.54 (-0.27–0.81)	6	6.38 (1.95–14.71)
Ovarian csyts	18	16.33 (33.6–66.3)	133	4.98 (31.86–41.82)	25	11 (23.72–45.72)
Uterine fibroid	0	0,0 (0,00–0.00)	27	2.71 (4.76–10.18)	24	10.89 (22.44–44.22)
Rupture of ovarian cysts	7	12.9 (6.48–32.32)	41	3.27 (8.08–14.62)	0	0,00 (0,00–0,00)
Endometriosis	1	5.36 (-2.59–8.13)	29	2.8 (5.23–10.83)	1	2.69 (-1.31–4.07)
Mullerian abnormality	2	7.48 (-1.93–13.03)	1	0.54 (-0.27–0.81)	0	0,00 (0,00–0,00)
Primary dysmenorrhea	2	7.48 (-1.93–13.03)	2	0.76 (-0.21–1.31)	0	0,00 (0,00–0,00)
Pelvic infection	3	9.03 (-0.7–17.36)	97	4.57 (22.29–31.43)	15	9.38 (11.45–30.21)
Ectopic pregnancy	1	5.36 (-2.59–8.13)	21	2.41 (3.40–8.22)	1	2.69 (-1.31–4.07)
Ovarian torsion	2	7.48 (-1.93–13.03)	5	1.2 (0.18–2.58)	0	0,00 (0,00–0,00)

Table 4. Etiology of APP

Etiology	**n**	**%**
Gynecologic	469	93,24
Nongynecologic	24	4,77
Undetectable	10	1.99
Total	**503**	**100**

The most common nongynecologic APP factor causing pelvic pain was acute appendicitis, and all of the 15 cases were diagnosed with laparotomies performed by the relevant departments. The second most common APP factor was nephrolithiasis, which was diagnosed in the urology department (Table 1).

Discussion

APP is a nonspecific complaint regarding the lower abdominal region, and can be sharp or dull, continuous or intermittent, and localized or diffused, sometimes associated with menstrual periods.[1,2] In the evaluation of a patient complaining of APP, certain information regarding chronic diseases and living conditions along with gynecologic history, previous pregnancies and methods of delivery, previous ectopic pregnancies, pelvic infections, and previous pelvic surgeries should be carefully investigated. Information on the onset, duration and diffuseness of symptoms, whether symptoms are unilateral or bilateral, and the presence of situations that increase or decrease pain should be obtained.[5,7] Vital functions of the patients admitted with APP complaints should be quickly evaluated concurrently with the determination of the patients' complaints and investigation of their gynecologic and general medical histories. Assessment of vital risk(s), possible cause(s), beginning investigation of cause(s), and choosing appropriate imaging techniques and rapidly performing them are crucial during the diagnosis and treatment periods.[8] During the initial assessment of the patient, complete blood count, blood glucose, urine test, and urine pregnancy test should be requested.[3] In the following period, specific tests for the diagnosis and differential diagnosis may be required. According to the American College of Radiology (ACR) criteria, USG is the primary choice of imaging techniques in APP patients. This is due to USG being nonradioactive, harmless in regards to the potential pregnancy in patients at reproductive age, easy-to-use with rapid results, and ready-to-use, as well as having good visualization of the pelvic organs.[6,9]

In our study, the most commonly used imaging technique was also USG. In addition to suprapubic USG, transvaginal USG was performed in all married patients, excluding adolescents.

The most common cause for APP is ovarian cysts.[10,11] In our study, the most common cause of APA in all three groups was ovarian cysts and related complications. Although many of the developing ovarian cycts are physiologic, the age period is an important factor for the possibility of malingnancy. At both ends of the reproductive period (menarche and pre- postmenopausal periods) the probability of malignancy of the ovarian malignancy increases. Due to increased incidence of functional cysts with menarche, malignant neoplasms are rare in adolescents. The assessment of the etiology and choice of treatment of pelvic pain in adolescent patients requires care and diligence. For dysmenorrhea and ovarian cysts that are frequently seen in this period, conservative approach is appropriate.[12,13] However, acute appendicitis which was the most common cause of nongynecologic APA in adolescents, should be carefully evaluated in this age group.[14]

In our study, the most common cause of APP was determined to be ovarian cysts in the adolescent and reproductive age groups with the addition of cyst complications (rupture, torsion, etc.) in the adolescent group. In a review on gynecologic problems commonly observed in adolescents, the most common causes of APP were determined to be menstrual irregularities and pelvic infections.[15] The ovarian cysts observed in that period are usually simple functional cysts, and they disappear by themselves following a few menstrual cycles.[4] In a study with 521 cases which investigated adnexal masses in adolescent period, 92% of all adnexal masses were reported as benign and non-neoplastic.[16]

Another condition not to be overlooked in the adolescent period is Mullerian anomalies. The Mullerian system should be examined, particularly in the presence of progressive pelvic pain or renal agenesis (due to the developmental coupling of urinary and genital systems in the embryonic stage) following first menstruation.[17,18] This condition, also known as the OHVIRA syndrome or Herlyn-Werner-Wunderlich syndrome (unicornuate or didelphic uterus with obstructed hemivagina and ipsilateral renal agenesis in the Mullerian system) in the literature, was determined in the current study in two adolescent patients complaining of APP. In the presence of a Mullerian anomaly, genital and urinary systems should be examined in more details with MRG, IVP, and endoscopic techniques in addition to USG and Doppler imaging.

While 76.97% of the patient population comprised of reproductive age patients, it is known that ovarian pathologies are most commonly observed in this group of patients (ages 20 to 44 years). Eighty percent to 85% of these were benign. The occurrence probability of primary ovarian tumors in a woman under

the age of 45 years is one in 15.[10] Benign gynecologic problems are usually observed as causes of APP in the reproductive period. However, a malignant ovarian tumor with germ cell origin was only observed in one of the cases (0.27%) in the current study. In a study by Kontoravdis, et al. 22.8% salpingitis and 19% ectopic pregnancy rates were reported as causes of APP, while no pathologies were found in 7.5% of all cases.[19] In the current study, the rates of APP causes were 48.19% for ovarian cysts and rupture, 26.86% for pelvic infections, and 5.81% for ectopic pregnancies. In a study by Yenicesu, et al. these rates were 33.6% for ovarian cyst ruptures, 26.8% for ectopic pregnancies, and 23.2% for pelvic inflammatory diseases.[2] In our study, pelvic infection was secondary following ovarian cyst and complications in the adolescent and reproductive age groups, and third in the perimenopausal / menopausal group as the cause of APP. The majority of cases being in the reproductive age group and the most common pathologies developing depend on ovarian cysts and complications. In addition to the process of vital risk assessment at the time of admission due to APP, the treatment approaches for the future protection of organs is also worrying. In our study, 20.27% of the patients were required surgical approach. Furthermore, the morbidity due to long-term sequels (recurring PIH attacks, tubo-ovarian abscess, predisposition to ectopic pregnancy, and chronic pelvic pain) of increasingly observed pelvic inflammatory disease that occur as a result of subacute progression caused by acute, insufficient, or inappropriate use of antibiotics is crucial. The reason for endometriosis being less frequently observed as a cause of APP is due to the fact that it is a chronic pelvic pain factor. Endometrioma cyst rupture or torsion can occasionally be the cause of APP.

The increase in ectopic pregnancies over the last three decades has recently plateaued.[20] When findings of the current study are considered, ectopic pregnancy with a rate of 4.90% (23 cases) is a rare cause of APP. As a result of the advances in USG technology and its widespread use in early pregnancies, presence of sensitive markers such as βhCG and progesterone, and raised awareness among patients and doctors, ectopic pregnancy cases are diagnosed earlier and treated with conservative medical methods.[21]

The rate of malignant ovarian tumors was 8.3% (six cases) in the perimenopausal / menopausal group in our study. Patients with the suspicion of malignity should be prepared for surgery in elective conditions after performing all examinations, excluding life-threatening situations. Among the symptomatology of these patients, gastrointestinal complaints such as abdominal distention, nausea, vomiting, and loss of appetite are frequently observed along with pelvic pain. No significant findings may be observed other than nonspecific findings in laboratory tests such as increased CA-125 and erythrocyte sedimentation rate, and positive occult blood in stool. In this period, when an adnexal mass is detected as the cause of APP, the malignity potential should be assessed using tumor markers and advanced imaging techniques (MRG or computerized tomography [CT]). MRG and CT are also important in gynecologic and nongynecologic differential etiology. Various degenerations that emerge in the myomas can also be the cause of pelvic pain.[22] Although pelvic infection and tubo-ovarian abscess are observed less in this period, it was the third most common pathology in the current study. The most common pathology as nongynecologic causes is acute appendicitis. Ruptured acute appendicitis can affect fertility by causing infection and abscess in pelvic structures through adjacency. In addition, factors such as urinary stones, cystitis, and diverticulitis can be causes of APP.

In the approach to APP, performing examinations according to the most common etiologic factors with the consideration of age groups, following a carefully obtained medical history, will prevent loss of valuable time for accurate diagnosis. Ovarian cysts and Mullerian anomalies in adolescents, life-threatening ovarian cyst ruptures that negatively affect fertility in the reproductive period, ovarian cyst torsions, pelvic infections and ectopic pregnancies, and benign myomas, as well as the malignity potential in adnexal masses in perimenopausal / menopausal patients should be kept in mind. Early and accurate diagnosis of APP will often enable more effective and conservative treatment methods for life-threatening pathologies.

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