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Improving quality and decreasing cost in gynecologic oncology care. Society of gynecologic oncology recommendations for clinical practice

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HIGHLIGHTS

- There are areas where costs may be reduced in gynecologic oncology practice.
- Cost reduction does not mean quality reduction in the delivery of gynecologic oncology care.

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ABSTRACT

Objective. To identify potential cost savings in gynecologic oncology care without sacrificing quality.

Methods. Members of the Clinical Practice Committee of the Society of Gynecologic Oncology were asked to review current practice patterns in gynecologic oncology and assess the potential for cost savings founded on evidence-based medicine and current guidelines.

Results. Five clinical practices were identified including the following: vaginal cytology for endometrial cancer survivors; colposcopy for low grade cytologic abnormalities for cervical cancer survivors; routine imaging studies for gynecologic cancer survivors; screening for ovarian cancer with serum biomarkers and ultrasound; and improving palliative care for gynecologic cancer patients. Review of the published literature and guidelines were performed to make evidence-based recommendations for cost effective quality gynecologic oncology care.

Recommendations.

- Do not perform Pap tests of the vaginal cuff in patients with a history of endometrial cancer.
- Do not perform colposcopy for low grade Pap tests in women with a history of cervical cancer.
- Avoid routine imaging for cancer surveillance in asymptomatic women with gynecologic cancer, specifically ovarian, endometrial, cervical, vulvar and vaginal cancer.
- Do not screen women at low risk for ovarian cancer with ultrasound or CA-125 or other biomarkers.
- Do not delay basic level palliative care for women with advanced or relapsed gynecologic cancer, do refer to a palliative care specialist when needed, and avoid unnecessary treatments at life's end.

Introduction

The increasing cost of US healthcare over the last 10 years compared to other countries has led to nationwide discussions concerning costs of care. In response to the rising cost of cancer care, the American Society of Clinical Oncology released a list of 5 opportunities to improve value in cancer care. As a leader in cancer care for women, the Society of Gynecologic Oncology (SGO) sought to identify comparable ways to improve the value of gynecologic cancer care without sacrificing quality of care.

A committee of SGO members was established to investigate evidence-based recommendations for cost-containment in gynecologic

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oncology. The following describes the five areas identified for cost-containment specific to gynecologic oncology. The literature and current treatment guidelines were reviewed to develop evidence-based recommendations for maximizing value in gynecologic cancer care.

Pap testing in endometrial and cervical cancer survivors

Liquid-based cytology (Pap testing) of the vaginal cuff to detect recurrence of endometrial cancer is not an effective strategy. Data from large retrospective studies has demonstrated a low rate of asymptomatic recurrence from 0 to 6.8% [1–3] Cost effectiveness analysis of vaginal cuff cytology for the detection of endometrial cancer recurrence revealed this modality to be costly and poorly effective [4,5]. A recent study of 433 patients with a history of endometrial cancer, who contributed 2378 Pap tests over a 4 year period revealed that no recurrent endometrial cancers were detected based on these tests [5]. Additionally, no recurrences were detected by Pap testing in a recent review of only Type II endometrial cancers [6].

Pap testing in cervical cancer survivors has also been studied extensively, with rates of detection of asymptomatic central recurrence being very low (0–18%) [7]. One recent study demonstrated that liquid-based vaginal cytology assessment in patients treated for cervical cancer results in frequent abnormal tests (34%), but that only those with at least a high grade squamous intraepithelial lesion require colposcopy [8]; a comparable cost-effectiveness analysis showed that only colposcopy after high grade Pap testing is associated with increased recurrence detection [9]. Given these findings, we suggest that Pap testing of the vaginal cuff be withheld as a surveillance strategy for patients with endometrial cancer and that low grade Pap tests (ASCUS HPV + and LGSIL) not be followed by colposcopy for patients with cervical cancer. Finally, performance of vaginal cytology cannot be viewed as a replacement for a careful pelvic exam, which after patient-reported symptoms is still the best way to detect recurrences of endometrial and cervical cancers.

Recommendations

- Do not perform Pap tests of the vaginal cuff in patients with a history of endometrial cancer.
- Do not perform colposcopy for low grade Pap tests in women with a history of cervical cancer.

Routine use of CT and PET imaging for cancer surveillance for gynecologic malignancies

Endometrial cancer is often diagnosed as early stage disease where survival rates are excellent. The majority of recurrences tend to occur within the first two years following treatment. Most patients with recurrence present with symptoms and sometimes these symptoms lead to evaluation prior to a planned surveillance visit. Sartori et al. reported that 52% of patients presented with symptoms alone [10]. Berchuck et al. reported that up to 84% of patients with recurrent disease presented with symptoms and signs [11]. CT scans have only been reported to detect 5–21% of asymptomatic recurrences [12]. Gadducci et al. evaluated an intensive follow up schedule in patients with clinical stage I endometrial cancer. Overall survival was not impacted by patient factors such as stage, grade, myometrial invasion, histologic type, or lymph node status. There was similar survival in both the symptomatic or asymptomatic recurrences [13]. Improved survival has not been demonstrated by radiologic surveillance in patients with endometrial cancer. No prospective studies have been done looking at PET scan in surveillance for endometrial cancer. Since the chance of recurrence of early stage endometrial cancer is low and survival after salvage therapy for patients with distant recurrence is also low, we do not recommend routine use of imaging for asymptomatic patients with a history of endometrial cancer.

Patients with ovarian cancer have a high risk of disease recurrence. Studies evaluating the role of CT scans in detecting recurrent disease have had mixed results in the ability to detect disease, but have not shown improvement in overall survival. Because ovarian cancer recurrence can be small volume disease that can be missed on CT scan, use of PET scans has been advocated by some to achieve higher sensitivity [14]. However, Sironi et al. still reported a negative predictive value of only 57% which indicates that PET scans also have difficulty detecting small volume disease [15]. Importantly, the use of PET scan for surveillance of asymptomatic patients has not been well evaluated. Most studies evaluated its use in patients who were having symptoms or elevating CA-125. In this setting, PET was more efficient in detecting recurrences than CA125 or standard CT scans [16,17]. In light of Rustin's data reporting that treatment of recurrent ovarian cancer based on rising CA125 values versus waiting until symptoms did not improve overall survival, it is unclear that diagnosing recurrence earlier with CT or PET scan would improve overall survival [18]. Therefore, we do not recommend the use of CT or PET scan for ovarian cancer surveillance, and instead would use them as tools to evaluate patients in the setting of symptoms or worrisome physical exam findings [19].

Cervical cancer recurrence presents most commonly with symptoms. However, typically only patients with local recurrence are curable. CT scan has low yield in detection of asymptomatic recurrence. PET/CT has shown promise in detecting locoregional recurrence and predicting those patients who may have poorer prognosis after primary Multiple studies have reported the prognostic significance of post treatment PET scan 3 months after completion of treatment [15,20]. For instance, Schwarz et al., reported that 3 year progression free survival rates were 78% in patients with complete metabolic response, 33% in patients with partial metabolic response, and 0% in patients with progressive disease [20]. Siva et al. reported 95% 3 year survival in patients with complete metabolic response on PET 3–12 months after completion of treatment and discussed with such a low recurrence rate that a more conservative surveillance program could potentially be utilized for this group of patients [21]. Brooks et al. reported in a small, single institution study from a prospective database that patients diagnosed with asymptomatic recurrences by PET (9 patients) had a 59% 3 year survival compared to 19% 3 year survival in patients with symptomatic recurrences by PET (21 patients) [22]. One concern is that lead time bias may allow patients to have known recurrence longer, but may not truly have improved overall survival. These data support the use of one post-treatment PET scan to gain prognostic information, but that is a different issue than routine cancer surveillance. Further, prospective and multi-institutional studies need to be done to further evaluate the role of surveillance PET in cervical cancer. The cost of PET remains high. In the United Kingdom, a cost benefit analysis was performed with PET added to the typical cancer surveillance. This yielded a cost-effectiveness ratio of >1 million pounds per quality-adjusted life-year (QALY) and the additional cost per case of recurrence was 600,000 lb. Therefore PET scan is not currently recommended in the United Kingdom for surveillance [23].

Based on available evidence, a post-treatment PET scan obtained about three months after completion of cervical cancer treatment may provide prognostic information and in turn assist in further treatment planning. There is only preliminary data for use of PET in cervical cancer surveillance, and with well documented significant cost, we do not recommend CT or PET imaging for routine cervical cancer surveillance at this time [3,24].

CT scans are also not without their risk. Wen et al. study in JAMA evaluating radiation related cancer risk from annual CT scans of the chest, abdomen, and pelvis for 10 years to be 1.3% in women and as high as 7.9% in young women 20 years old getting PET/CT every 6 months for 10 years. Risk and benefits of any intervention must be

considered before implementing as routine use. Since there is no proven survival benefit for routine radiologic surveillance in gynecologic malignancies, it would seem the risk outweigh the benefits [25].

Recommendations

- A one-time post-treatment PET scan can be used for prognostic information in patients with cervical cancer.
- Avoid routine imaging for cancer surveillance in asymptomatic women with gynecologic cancer, specifically ovarian, endometrial, cervical, vulvar and vaginal cancer.

Serum biomarkers and ultrasound for ovarian cancer screening in low and high risk women

Screening for ovarian cancer remains challenging due to low disease prevalence, unknown prolonged preclinical phase, and lack of an effective screening test. CA125 is normal in 50% of early stage ovarian cancer and has low specificity in pre- and postmenopausal women [26]. In the Prostate, Lung, Colorectal, and Ovarian Cancer (PLCO) Screening Trial over 75,000 low risk postmenopausal women were randomized to no screening or screening with annual CA125 and pelvic ultrasound. Screening did not improve mortality from ovarian cancer and in fact caused harm due to the associated complications of undergoing surgery [27]. There is an ongoing trial in the UK assessing postmenopausal women with annual ultrasound examinations, with or without CA125 [28]. At this time and based on available studies, low risk women should not undergo screening for ovarian cancer.

For women with BRCA 1 or BRCA 2 mutations, risk-reducing salpingo-oophorectomy (RRSO) should be offered by age 40 [29]. Studies of screening alternatives to risk reducing surgery for women at familial risk are ongoing. Preliminary results from the United Kingdom Familial Ovarian Cancer Screen Study (UKFOCSS) emphasized the importance of strict adherence to the screening schedule and found that the screening interval needed to be more frequent than annually [30,31]. Preplanned analysis of GOG 199 (a prospective study of RRSO and longitudinal CA125 assays) and the results from a NCI Cancer Genetics Network study showed that CA125 abnormal thresholds based on menopausal status can improve the sensitivity of CA125 in this high risk population [32]. Although increased screening frequency with CA125 and pelvic ultrasounds every 6 months has been recommended for high risk patients by expert panels [33], it must be emphasized that there is no evidence this strategy is safe. Risk reducing surgery remains the preferred option for most women at high risk for ovarian cancer due to genetic susceptibility.

Biomarker testing algorithms are not to be confused with screening strategies. Biomarker tests are triage tools intended to aid in appropriate surgical referral of women with a pelvic mass to gynecologic oncologists [34]. The Risk of Ovarian Malignancy Algorithm (ROMA) incorporates HE4, CA125, and menopausal status into a logistic regression model to identify patients with an adnexal mass who are at high risk for malignancy [35,38]. Along with physician clinical assessment, OVA1® is a 5-analyte panel that includes CA125 II to identify ovarian malignancy in women planning surgery for an adnexal mass [36]. In the setting of a normal CA125, OVA1 can increase sensitivity for detection of a malignancy [37]. However, since the assay includes CA125, the addition of OVA 1 when the CA125 is already known to be elevated has limited utility. In this setting, HE4 may be more valuable to improve specificity of the abnormal CA125 [38]. Comparing the cost effectiveness of OVA1 to following ACOG referral guidelines and referral of all women who have an ovarian mass to a gynecologic oncologist, the most cost effective strategy remains adherence to the ACOG guidelines for management of an adnexal mass, with referral to a gynecologic oncologist when appropriate [39]. It is important to emphasize that these biomarker assays are not for ovarian cancer screening. These assays, if used at all, should only be used to help in the preoperative assessment of a woman with an adnexal mass.

Recommendations

- Do not screen women at low risk for ovarian cancer with ultrasound or CA-125 or other biomarkers.

Palliative care in gynecologic oncology

Palliative medicine is now a distinct medical specialty recognized by the American Board of Medical Specialties. This practice seeks to alleviate the spiritual, physical, emotional and psychological suffering of patients with incurable diseases. Palliative care significantly improves the quality of life for patients and their families when faced with serious life threatening illnesses, including advanced gynecologic cancers and can also substantially reduce the cost of caring for such patients [40]. In 2010, Temel et al. published a landmark article that clearly demonstrated the advantages of palliative care for patients with lung cancer. This randomized trial revealed that when palliative care was integrated "early on" in the course of standard treatment for patients with advanced lung cancer; patients not only had improved quality of life scores but they also had a significant improvement in overall survival [40]. Patients with metastatic or recurrent cervical cancer or patients with platinum-resistant ovarian cancer are potential groups with gynecologic malignancies who may benefit from early adoption of palliative care.

In the United States, excellent palliative care services are now recognized as a standard component of care for people with serious, advanced, and incurable illnesses. Hospice care is a distinct type of palliative care for patients and families in the last months of life. Many hospice services for oncology patients provide funding for hydration services, nutrition and symptom-reducing chemotherapy or radiation therapy. Gynecologic oncologists should familiarize themselves with the services available in their respective locations.

For Medicare beneficiaries, hospice care is a distinct insurance benefit available when prognosis is 6 months or less. Many physicians caring for seriously ill patients, including gynecologic oncologists, routinely overestimate patient prognosis by up to five-fold [41]. This may explain why many oncology patients in the US are enrolled into hospice too late in the trajectory of their disease, with up to 25% of incurable cancer patients dying in hospitals while receiving aggressive and ineffective care [42].

Gynecologic oncology patients were evaluated by Fauci et al., for utilization of palliative care services. Although 70% of patients were referred to palliative care, the median time from hospice enrollment to death was only 22 days. Over half of the patients received chemotherapy and 58% underwent a procedure in the last six months of life [43]. In another recent article in the gynecologic oncology literature, Doll and colleagues observed that the median survival for patients after a hospice discussion occurred was only 33 days, suggesting that gynecologic oncologists are not speaking to patients early enough about the benefits of palliative and hospice care during the last six to twelve months of life [44].

There are financial as well as clinical benefits to appropriate use of palliative care services. Albanese et al., reported cost avoidance when 209 patients were cared for on an inpatient palliative care unit instead of other service areas of a large tertiary teaching hospital. The reported annualized hospital cost avoidance due to regular utilization of the acute palliative care unit was nearly $850,000 [45]. Gade et al., demonstrated an inpatient cost savings of approximately $5000 per patient in the last month of life when palliative care was widely utilized [46]. Similarly, a study by Brumley et al. revealed a "per patient cost savings"

of over $7000 when palliative home-based care services were utilized for patients with terminal illnesses [47].

Basic level palliative care should be within the scope of practice for all physicians who care for patients with serious or life limiting illnesses [48]. National oncology organizations, including SGO, offer training programs, workshops and curricula to help oncologists improve their terminal care clinical skills. Specialty-level palliative medicine physicians can help with the management of the most challenging cases.

Recommendations

- Don't delay basic level palliative care for women with advanced or relapsed gynecologic cancer as soon as appropriate, do refer to a specialist in palliative care when needed, and avoid unnecessary treatments at life's end.

Conclusion

Members of the SGO have identified practical ways to improve the quality and value of the care provided women with gynecologic cancers. These include better use of diagnostic studies for cancer screening and surveillance, appropriate utilization of more costly treatments, and early integration of palliative services for women with recurrent terminal cancer. These recommendations are the result of broad support from the Clinical Practice Committee membership and the best available evidence. If implemented, these practices can immediately improve the value of the care we provide our patients.

Conflict of interests

The authors declare they have no conflict of interest.

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