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Research Paper

Frailty and treatment decisions in older patients with vulvar cancer: A single-center cohort study

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ABSTRACT

Introduction: Vulvar cancer is a disease that mainly affects older women. Frailty is an important predictor of outcomes and geriatric assessment can help tailor treatment decisions and improve outcomes. This study aims to assess the prevalence of frailty in older women with vulvar cancer, and how it relates to integrated geriatric care and treatment according to the oncological guidelines.

Materials and Methods: A single-center cohort study was performed, among patients 70 years and older, who were diagnosed with vulvar cancer at Leiden University Medical Center, between January 2012 and May 2020. Data on geriatric assessment, treatment decision-making and treatment-related outcomes were collected.

Results: Our study included 114 patients. Mean age was 79.7 years, and 52 patients (45.6%) were frail. Of the frail patients, 42.0% were referred to a geriatrician. In eight of these cases, the geriatrician was actively involved in weighing the benefit and harm of standard oncological treatment versus de-escalated treatment. Frailty, higher age, impairment in the somatic domain, cognitive impairment, and functional dependency were associated with referral to a geriatrician and with active involvement of a geriatrician in decision making. In 26 of frail patients (50.0%) oncological treatment was de-escalated. Frailty, higher age, impairment in the somatic domain, cognitive impairment, and functional dependency were associated with de-escalation of treatment. De-escalated treatment did not compromise survival.

Discussion: Frailty is prevalent among older women with vulvar cancer and is associated with referral to a geriatrician and de-escalation of oncological treatment. While this reflects that it is deemed important to tailor treatment decision for frail patients, most frail patients are not routinely evaluated by a geriatrician. Further multidisciplinary collaboration and research is necessary to optimize tailored treatment decisions for this patient group.

1. Introduction

Vulvar cancer is the fourth most common gynecological cancer, making up 5 % of all malignancies of the female genital tract [1]. The annual incidence rate is 2.6 per 100,000 women in the United States [2]. Vulvar cancer primarily affects older women; the peak incidence is between the ages of 65 and 75 years [3].

The cornerstone of treatment of early stage vulvar cancer is surgery and aims for complete resection of the tumor with adequate tumor free margins [3,4]. Treatment is associated with high rates of surgery-related morbidity; wound dehiscence has been reported in 17–30% of patients, lymphocele in 7–40% and lymphedema in 14–48% of patients [3,5]. Also, anatomical changes due to surgery lead to pain and difficulties with intercourse [6]. Overall, the treatment of vulvar cancer has a tremendous impact on physical, emotional and social well-being. Quality of life scores after treatment are the lowest of all

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Table 1
Baseline characteristics.

Patient characteristics ($n = 114$)	
Age in years (mean; SD)	79.7 (6.8)
Frailty[a] (%)	52 (45.6)
Impaired somatic domain (%)	37 (32.5)
Charlson Comorbidity Index (Median; IQR)	1.0 (1.0–2.0)
Score ≥ 3 (%)	27 (23.7)
Number of medication (median; IQR)	5.0 (2.0–8.0)
Polypharmacy (≥ 5 prescriptions) (%)	62 (54.4)
MNA-SF (median; IQR)	12.0 (11.0–14.0)
Score < 12 (%)	13 (11.4)
BMI (mean; SD)	28.1 (6.56)
Impaired functional domain (%)	25 (21.9)
KATZ-ADL index (median; IQR)	8.0 (0.0–1.0)
Score ≥ 2 (%)	12 (10.5)
WHO performance score	
Median; IQR	8.0 (1.0–2.0)
Score ≥ 3 (%)	14 (12.3)
History of fall in previous 6 months (%)	8 (7.0)
Impaired cognitive domain (%)	16 (14.0)
History of confusion during illness or hospital admission (%)	9 (7.9)
6CIT (median; IQR)	0.0 (0.0–4.0)
Score ≥ 8 (%)	6 (5.2)
Dementia Diagnosis (%)	5 (4.4)
G8 (median; IQR)	15.0 (13.0–16.0)
score ≤ 14 (%)	15 (13.1)
Living situation (%)	
Alone	50 (43.9)
With others	50 (43.9)
Care facility	4 (3.5)
Other	10 (8.8)
FIGO stadium (%)	
I	72 (63.2)
II	7 (6.1)
III	29 (25.4)
IV	6 (5.3)
Treatment (%)	
Excision	96 (84.2)
SN without IFL or LN debulking	51 (44.7)
IFL or LN debulking	25 (21.9)
Adjuvant radiotherapy	24 (21.1)
Neoadjuvant (chemo)radiotherapy	4 (3.5)
(chemo)radiotherapy without surgery	11 (9.6)
Best supportive care	5 (4.4)

Missing data: Frailty n = 13 (11.4%) MNA-SF $n = 80$ (70.2%), BMI $n = 4$ (3.5%), KATZ-ADL $n = 22$ (19.3%), WHO $n = 41$ (36.0%), History of fall $n = 24$ (21,1%), History of confusion $n = 23$ (20.2%), 6CIT $n = 70$ (61.4%), G8 n = 83 (72.8%). Abbreviations: *BMI* body mass index, *FIGO* International Federation of Gynecology and Obstetrics, *G8* Geriatric 8 health status screening tool, *IFL* inguinofemoral lymphadenectomy, *IQR* interquartile range, *KATZ-ADL* Katz Index of Independence in Activities of Daily Living, *MNA*-SF Mini Nutritional Assessment Short Form, SD standard deviation, *SN* sentinel node procedure, *WHO* World Health Organization, *6CIT* Six-item Cognitive Impairment Test.

[a] Frailty is defined as an impairment in the somatic-, functional-, or cognitive domain, or an abnormal G8 score.

gynecological cancers [3]. Older patients with vulvar cancer have higher rates of post-treatment morbidity and mortality [7–10]. Little is known on patient reported outcome measures for older patients.

The high rates of post-treatment morbidity and mortality in older patients, combined with the heterogeneity of the health status of the older adult population, can complicate treatment decisions for this group. Age itself is not a useful selection tool for oncological treatment. A geriatric assessment (GA), however, maps individual health status and preferences, and can be used to select appropriate oncological treatment. Two recent trials showed that a GA reduces toxic effects in cancer care by tailoring treatment, without compromising survival [11,12]. There is no literature available on the effects of tailoring treatment in patients with vulvar cancer.

Dutch and European guidelines for vulvar cancer do not mention how to tailor diagnosis, treatment, or follow-up to the older patient [13,14]. Interdisciplinary guidelines such as the American Society of Clinical Oncology (ASCO) guidelines on geriatric oncology [15] and the pre-operative management of the geriatric surgical patient guidelines by the American College of Surgeons (ACS) and American Geriatrics Society (AGS) [16] do stress the importance of screening for frailty, further evaluation by a geriatrician when patients are at risk, and involvement of geriatricians in patient-tailored decision making in order to improve outcomes.

The present study, set in a tertiary referral center for women with vulvar cancer in the Netherlands, aims to assess the prevalence of frailty among older women with vulvar cancer, how it relates to involvement of a geriatrician, and to de-escalation of standard oncological treatment. This study also evaluates how de-escalation of treatment related to outcomes such as survival, and treatment related outcomes.

2. Materials and Methods

This single center, cohort study was performed at Leiden University Medical Center (LUMC, the Netherlands), a tertiary referral center for women with vulvar cancer. Data collection took place in the context of the Triage Elderly Needing Treatment (TENT) study, approved by the Medical Ethics Committee (ID number NL53575.058.15) of the LUMC and a 'certificate of no objection' was issued for data collection of patients not included in the study. Details on the design of the TENT study can be found elsewhere [17].

We included women aged 70 years and older who were diagnosed with primary vulvar cancer of any stage (International Federation of Gynecology and Obstetrics (FIGO) stage I – IV) [18] between January 2012 and May 2020. Patients with melanoma of the vulva or vulvar intraepithelial neoplasia were excluded.

2.1. Data Assessment

The following baseline data were collected from patient files: demographics (age, living situation), Body Mass Index (BMI), and polypharmacy (defined as daily use of five or more different prescriptions). Tumor characteristics (FIGO stage) and type of treatment (surgical, radiotherapy and/or chemotherapy) were collected. The FIGO stage was determined based on the pathological reports. In case of missing pathology, the clinical FIGO stage was reported.

Data on frailty characteristics that were obtained included comorbidities (using the Charlson Comorbidity Index [CCI]) [19], and World Health Organization (WHO) performance status [20]. There are two moments in the routine clinical care pathway for patients with vulvar cancer at the LUMC where frailty screening or GA are formally embedded for older patients: the outpatient gynecology clinic and the inpatient gynecology ward when an older patient is admitted to the hospital for scheduled surgery. Results of frailty screening at the outpatient gynecology clinic, consisting of a Geriatric 8 health status screening tool (G8) [21] and Six-item Cognitive Impairment Test (6CIT) [22], were collected. Results of the inpatient GA, consisting of fall risk (defined as any fall incident in the last six months), a Mini Nutritional Assessment Short Form (MNA-SF) [23], history of confusion during illness or hospital admission, and the Six-item Katz Index of Independence in Activities of Daily Living (KATZ-ADL) [24], were also obtained. This GA is part of a mandatory national Dutch Patient Safety System (*Veiligheid Management Systeem Kwetsbare ouderen,* VMS) [25].

We defined patients as frail when they had an impairment in one of the geriatric domains (somatic, functional or cognitive), or an abnormal G8 score (≤ 14). An impairment in the somatic domain was defined as a high CCI score (≥ 3), or risk of malnutrition (MNA-SF < 12). An impairment in the functional domain was defined as a KATZ-ADL ≥ 2

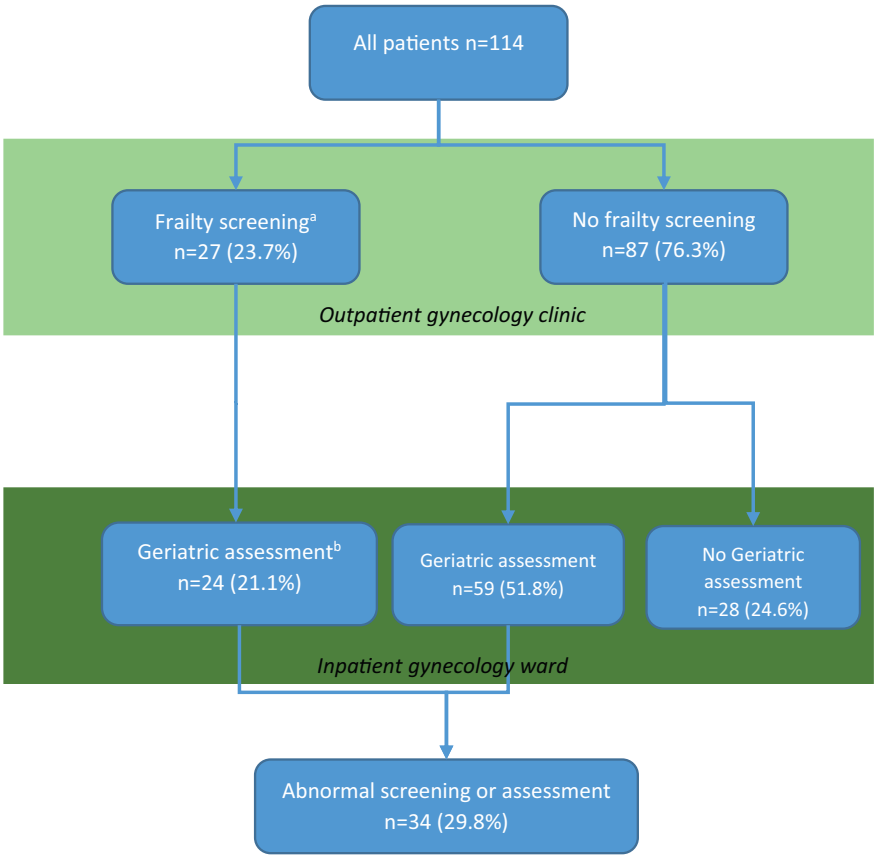

Fig. 1. Flowchart of patients screened or assessed for frailty during routine clinical care.
[a]Outpatient frailty screening consists of the Geriatric 8 health status screening tool (G8), and Six-item Cognitive Impairment Test (6CIT).
[b]Inpatient geriatric assessment consists of a history of confusion, history of fall, and Katz Index of Independence in Activities of Daily Living (KATZ-ADL). These items are elements of larger geriatric assessment (VMS) used by nurses when an older patient (≥70) is admitted to the hospital.

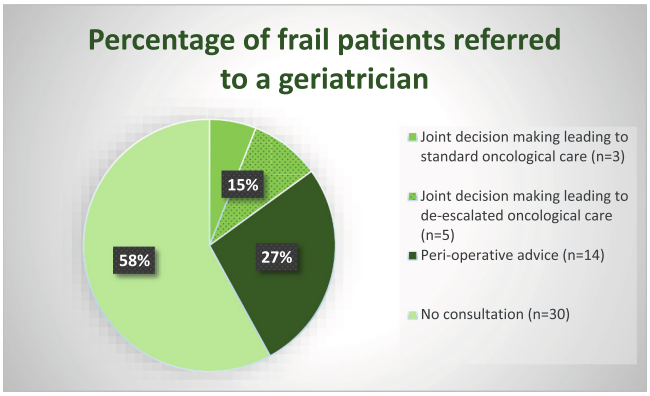

Fig. 2. Percentage of frail patients referred to a geriatrician.

indicating functional dependency, WHO ≥3 indicating confinement to a bed or chair for >50% of the day, or a history of fall in the previous six months. An impairment in the cognitive domain was defined as a 6CIT score ≥ 8, diagnosis of dementia, or history of confusion during illness or hospital admission. Patients were considered not frail if each domain (somatic, functional, and cognitive) was assessed by at least one tool with a normal score, or the G8 score was within the normal range.

For all patients, we evaluated whether they were referred to the geriatric outpatient clinic for evaluation. We made a distinction between merely peri-operative advice, or explicit recommendations for the course of treatment based on a (comprehensive) geriatric assessment (i.e., standard oncological treatment or de-escalated oncological treatment) as found in the patient medical record. We will refer to the latter as joint decision making.

For all patients, we recorded whether patients received the standard oncological treatment as stated by the Dutch Association for Obstetrics and Gynecology (*Nederlandse Vereniging voor Obstetrie en Gynaecologie* NVOG) guideline [13], or whether patients received a de-escalated treatment adjusted to patient characteristics.

The following outcomes were obtained from patient files: all-cause mortality within 6 and 12 months after start of treatment, recurrent disease within 6 and 12 months, (re-)admissions within 6 months, post-operative complications within 30 days (graded according Clavien-Dindo [26]), chemotherapy and radiotherapy toxicity within 3 months (grading according Common Terminology for Adverse Events [27]) as well as chemotherapy and radiotherapy discontinuation.

2.2. Data Analysis

Data were presented by numbers and percentages, mean with the standard deviation (SD), or median with the interquartile range (IQR; Q1, Q3), depending on the distribution.

We analyzed how many patients were screened or assessed for frailty at any point during the treatment trajectory. Patients who were referred to a geriatrician for consultation were compared to patients who were not, based on impairments in somatic, functional, or cognitive domains, and age. A similar analysis was done for patients who were treated according to the guidelines and those who were not. Furthermore, oncological and treatment-related outcomes were compared between patients who received standard oncological care and those who received a de-escalated treatment. The independent *t*-test was used for continuous data. Chi-square test was used for categorical data when at least 80% of expected frequencies were more than five, otherwise Fisher's exact test was performed. Odds ratios (OR) or mean difference (MD) were calculated as an effect measure. All analyses were performed using IBM SPSS Statistics version 25.

Table 2
Association between frailty and the degree of involvement of a geriatrician.

All n = 114	No Geriatric consultation *N* = 86	Any outpatient Geriatric consultation[b] *N* = 28	p value[d]	Odds radio or mean difference (95% CI)	No joint decision making *N* = 106	Joint decision making[c] N = 8	p value[e]	Odds ratio or mean difference (95% CI)
Age (mean, SE)	78.9 (0.8)	82.4 (0.9)	0.004	3.6 (1.2–6.0)	79.4 (0.7)	84.0 (1.2)	0.005	4.7 (1.7–7.6)
Frailty[a] (%) n = 52	30 (34.8)	22 (78.6)	0.001	5.3 (1.9–14.5)	44 (41.5)	8 (100.0)	0.006	NE[f]
Impaired somatic domain *n* = 37	23 (26.7)	14 (50.0)	0.022	2.7 (1.1–6.6)	31 (29.2)	6 (75.0)	0.014	7.3 (1.4–37.9)
Impaired functional domain *n* = 25	12 (14.0)	13 (46.4)	0.002	4.3 (1.7–11.4)	20 (18.9)	5 (62.5)	0.022	6.0 (1.3–27.3)
Impaired cognitive domain *n* = 16	7 (8.1)	9 (32.1)	0.003	5.3 (1.8–16.2)	11 (10.4)	5 (62.5)	0.001	14.4 (3.0–68.6)
G8 ≤ 14 (%) *n* = 15	5 (5.8)	10 (35.7)	<0.001	NE[f]	13 (12.3)	2 (25.0)	0.226	NE[f]

Missing data: Frailty *n* = 13 (11.4%), Functional domain *n* = 14 (12.3) G8 *n* = 83 (72.8%).
Abbreviations: *G8* Geriatric 8 health status screening tool, *NE* not estimable, *CI* confidence interval, *SE* standard error.
[a] Frailty is defined as an impairment in the somatic-, functional-, or cognitive domain, or an abnormal G8 score.
[b] Any outpatient geriatric consultation = consultations that either serve the purpose to give additional advice (such as peri-operative advice to prevent delirium) after a treatment plan has been drawn up by the gynecologists, or consultations that aim for joint decision making.
[c] joint decision making = geriatrician is actively involved in making a patient-tailored treatment plan together with the gynecologists and/or oncologist, and performs a geriatric assessment.
[d] *p* value to indicate difference between no geriatric consultation and any geriatric consultation, calculated by Chi-square test for categorical data when at least 80% of expected frequencies were >5. Alternatively, Fisher's exact-test was performed. The independent *t*-test was used for continuous normally distributed data.
[e] p value to indicate difference between no geriatric consultation and joint decision making, calculated by Chi-square test for categorical data when at least 80% of expected frequencies were >5. Alternatively, Fisher's exact-test was performed. The independent *t*-test was used for continuous normally distributed data.
[f] NE Odds ratio not estimable due to a value of 0 in one of the crosstabs.

Table 3
Association between frailty and standard oncological treatment.

All patients *n* = 114	Standard oncological treatment *N* = 73	De-escalated oncological treatment *N* = 41	p value[b]	Odds ratio or mean difference (95% CI)
Age (mean, SE)	77.5 (0.7)	83.5 (1.1)	<0.001	−6.0 (−3.5 - -8.6)
Frailty[a] (%) *n* = 52	26 (35.6)	26 (63.4)	<0.001	0.2 (0.1–0.5)
Impaired somatic domain (%) n = 37	19 (26.0)	18 (43.9)	0.018	0.4 (0.2–0.9)
Impaired functional domain (%) n = 25	14 (19.2)	11 (26.8)	0.005	0.3 (0.1–0.7)
Impaired cognitive domain (%) n = 16	11 (15.1)	5 (12.2)	0.003	0.2 (0.1–0.6)
G8 ≤ 14 (%) n = 15	5 (6.8)	10 (24.4)	0.104	0.3 (0.1–1.3)

Missing data: Frailty n = 13 (11.4%), Functional domain n = 14 (12.3%), G8 n = 83 (72.8%).
Abbreviations: *G8* Geriatric 8 health status screening tool, *CI* confidence interval, *SE* standard error.
[a] Frailty is defined as an impairment in the somatic, functional or cognitive domain, or an abnormal G8 score.
[b] p value to indicate difference between treatment according to the guideline and not, calculated by Chi-square test for categorical data when at least 80% of expected frequencies were >5. Alternatively, Fisher's exact-test was performed. The independent *t* test was used for continuous normally distributed data.

3. Results

A total of 114 patients were included. Table 1 shows the baseline characteristics of all patients. The mean age was 79.7 years and 52 patients (45.6%) met the criteria for frailty. Nearly one third of patients had an impairment in the somatic domain (*n* = 37, 32.5%). Twenty-seven patients (23.7%) had a high comorbidity index, and thirteen patients (11.4%) were at risk of malnutrition. Functional dependency was identified in 25 patients (21.9%): fourteen patients (12.3%) had a high WHO performance score, twelve patients (10.5%) were identified through an abnormal KATZ-ADL score, and eight patients (7.0%) had a history of a recent fall. Cognitive impairment was identified in sixteen patients (14.0%): five patients (4.4%) were previously diagnosed with dementia, six patients (5.2%) had an abnormal 6CIT score, and nine patients (7.9%) had a history of confusion during illness or hospital admission. For fifteen patients (13.1%), the G8 screening tool indicated frailty.

Fig. 1 shows that 27 patients (23.7%) were screened for frailty at the gynecology outpatient clinic. In the inpatient gynecology ward, 24 patients (21.1%) received an additional GA, and 59 patients (51.8%) were assessed who had previously not been screened. Both frailty screening and GA were absent in 28 (24.6%) of patients. An abnormal frailty screening or GA was present in 34 patients (29.8%). The investigators of this study identified an additional eighteen patients who met the frailty characteristics based on data collected outside of these formal moments in routine care.

Fig. 2 shows that of the frail patients, fourteen were referred to a geriatrician for peri-operative advice (26.9%), and eight were referred for joint decision making (15.4%), leading to de-escalated oncological treatment in five cases. Details on the decision-making pertaining to these five cases are described elsewhere (Supplementary S1). Most frail patients (57.7%) were not referred to a geriatrician.

Table 2 shows the association between frailty characteristics and the degree of involvement of a geriatrician. The data shows significant association between frailty and involvement of a geriatrician ($p = 0.001$, OR = 5.3 95% confidence interval [CI] 1.9–14.5). Patients who were referred to a geriatrician were older ($p = 0.004$, MD = 3.6 years 95% CI 1.2–6.0). Also, patients who had an abnormal G8 score, or an impairment in any of the defined domains were more often referred to a geriatrician. Frailty was also associated with joint decision making ($p = 0.006$, OR not estimable (NE)). Patients who were referred to a geriatrician for joint decision making were older ($p = 0.005$, MD = 4.7 years 95% CI 1.7–7.6). Impairment the somatic-, cognitive-, or functional domain were associated with joint decision making. No association was found between an abnormal G8 score and joint decision making ($p = 0.226$, OR NE).

Forty-one patients received de-escalated oncological treatment, of

Table 4
Association between treatment (standard care vs. de-escalated care) and adverse outcomes.

	Standard oncological treatment N = 73	De-escalated oncological treatment N = 41	p value[a]	Odds ratio (95% CI)
All-cause mortality < 6 months (%)	7 (9.6)	8 (19.5)	0.133	0.4 (0.1–1.3)
All-cause mortality < 1 year (%)	5 (6.8)	6 (14.6)	0.172	0.4 (0.1–1.3)
Recurrent disease < 6 months (%)	4 (5.5)	5 (12.2)	0.133	0.3 (0.1–1.3)
Recurrent disease < 1 year (%)	11 (15.0)	7 (17.1)	0.299	0.6 (0.2–1.7)
(Re)admission < 6 months (%)	26 (35.6)	14 (34.1)	0.901	0.9 (0.4–2.1)
	Surgery in context of standard treatment *N* = 66	**Surgery in context of de-escalated treatment *N* = 33**		
Post-operative complications < 30 days (%)				
Any	49 (74.2)	21 (63.6)	0.274	1.6 (0.7–4.0)
Wound-dehiscence	35 (53.0)	15 (45.5)	0.241	1.6 (0.7–3.5)
Infection	22 (33.3)	7 (21.2)	0.124	2.0 (0.8–5.4)
Falls	4 (6.1)	0 (0)	0.295	NE[d]
Lymphoedema	15 (22.7)	2 (6.1)	0.024	5.0 (1.1–23.3)
Delirium	5 (7.6)	4 (12.1)	0.72	0.7 (0.2–2.7)
Severe complications[b]	5 (7.6)	1 (3.0)	0.417	2.9 (0.3–26.1)
	Chemotherapy in context of standard treatment N = 8	**Chemotherapy in context of de-escalated treatment N = 1**		
Chemotherapy toxicity grade 3–5 < 3 months (%)[c]	1 (12.5)	0 (0)	1	NE[d]
Chemotherapy treatment discontinuation (%)	2 (25)	1 (100)	0.333	NE[d]
	Radiotherapy in context of standard treatment N = 25	**Radiotherapy in context of de-escalated treatment N = 12**		
Radiotherapy toxicity grade 3–5 < 3 months (%)[c]	7 (28)	4 (33.3)	1	0.8 (0.2–3.4)
Radiotherapy treatment discontinuation (%)	1 (4)	1 (8.3)	1	2.2 (0.1–38.2)

[a] p value to indicate difference between treatment according to the guideline and not, calculated by Chi-square test for categorical data when at least 80% of expected frequencies were >5. Alternatively, Fisher's exact test was performed.
[b] Severe complications were defined as grade 3 or higher, according to the Clavien-Dindo classification of post-operative complications.
[c] Toxicity grading for chemotherapy and radiotherapy according to the *Common Terminology for Adverse Events (CTCAE)*.
[d] NE Odds ratio not estimable due to a value of 0 in one of the crosstabs.

which 26 were frail (63.4%), eight were fit (19.5%), and data on frailty was missing for the other seven patients (17.1%). De-escalated treatment strategy could, for example, entail surgery on the primary tumor while refraining from performing a sentinel node procedure or other inguinofemoral treatment. Another example is palliative radiotherapy instead of surgery. Table 3 shows patients who were frail were less likely to receive standard oncological care ($p < 0.001$, OR = 0.2 95% CI 0.1–0.5). Patients who received standard oncological care were younger ($p < 0.001$, MD = −6.0 years 95% CI -3.5 - -8.6). Patients who were impaired in the somatic-, functional-, or cognitive domain were also less likely to receive standard oncological treatment. No association was found between abnormal G8 score and the oncological care plan ($p = 0.105$, OR = 0.3 95% CI 0.1–1.3).

Table 4. shows the association between type of treatment (standard care vs. de-escalated care) and adverse outcomes, such as mortality within one year, recurrent disease within one year or readmissions. Except for the occurrence of post-operative lymphoedema, which occurs less frequently in the de-escalated treatment group (6.1% vs. 22.7%), no differences in post-operative complications are found. No difference in chemo- and radiotherapy toxicity or discontinuation of treatment was found between groups.

4. Discussion

Our retrospective cohort study shows that frailty is prevalent among older patients with vulvar cancer. Frailty is associated with referral to a geriatrician and with de-escalated oncological treatment.

However, most patients ($n = 87$, 76.3%) were not screened for frailty at the outpatient clinic. Consequently, most patients who were frail, and thus at high risk for complications, long term toxicity, and deterioration of functionality, did not receive a consultation by a geriatrician. Joint decision making, where a geriatrician completes a GA and is actively involved in selecting appropriate oncological treatment, occurred in only a handful of patients. The literature states that a GA can change treatment decisions for 5 to 50% of older patients [28,29]. This study shows that if a geriatrician was consulted for joint decision making, oncological treatment was de-escalated in nearly two-thirds of patients.

Despite frailty being associated with de-escalated oncological treatment, it is important to note that half of patients who were frail received standard oncological treatment despite high risk of morbidity and mortality. Also, eight patients who did not receive standard oncological treatment were not frail. This could be because of patient preference, or possibly because of age-bias. Taken together, these findings suggest that there is room to further optimize clinical practice.

In our study, de-escalated treatment does not lead to higher rates of mortality or recurrent disease. However, this conclusion is an uncertain one, considering it is not possible to adjust for tumor characteristics due to the size of the cohort. It is supported by other studies that find that tailoring oncological care does not compromise survival [11,12]. Our study does show high rates of post-operative complications (74.2% in standard treatment, and 63.6% in de-escalated treatment), which is in line with findings in literature [3,5]. De-escalated treatment leads to fewer cases of lymphoedema, which is due to inguinofemoral lymphadenectomy being performed less frequent in this group.

In line with several geriatric oncology experts, we share the notion that patients over 70 years of age presenting with an oncological illness, should be structurally screened for frailty and, if necessary, receive a GA [30]. Routinely executing a frailty assessment at the outpatient clinic, could identify frail patients early on in the treatment trajectory and provides the opportunity to refer for a GA and to involve geriatricians in joint decision making. Two recent trials provide evidence that this course of action reduces the harmful effects in cancer care [11,12]. Our study shows that de-escalated treatment leads to less cases of lymphoedema, without compromising survival. Our study also highlights the difficulty of implementation of such care paths, as it shows that the formally integrated frailty screening and assessment in the outpatient and inpatient clinic, are often not performed.

To our knowledge, this is the first study to assess how frailty characteristics relate to the degree of involvement of geriatricians and de-escalated oncological treatment in patients with vulvar cancer. An important limitation is that although the cohort size is reasonable, a considerable amount of data was missing. Consequently, the subanalyses in this cohort were done in smaller group of patients. This limits the strengths of our recommendations. Also, data on the psychosocial domain was largely missing and so we could not integrate this into our frailty definition.

Future research that could help improve the onco-geriatric care for patients with vulvar cancer, could be to assess whether incorporation of a geriatrician in the care team would improve patient-reported outcomes such as quality of life. Another field of interest is the implementation of geriatric screening and how to successfully integrate this into routine care.

In conclusion, this study shows that clinicians share the notion that it is important to tailor treatment to the individual health status of the older patient, despite guidelines not stating how to do so [13,14]. It also shows that there is room for integration of interprofessional collaboration between gynecologist-oncologists and geriatricians in routine clinical care, in order to tailor treatment decisions and, ultimately, to improve outcomes.

Ethics Approval and Consent to Participate and Publication

Data collection took place in the context of the Triage Elderly Needing Treatment (TENT) study, approved by the Medical Ethics Committee (ID number NL53575.058.15) of the LUMC and a 'certificate of no objection' was issued for data collection of patients not included in the study.

Availability of Data and Materials

Confidential.

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Author Contributions

Study concept and design: EG, FB, SM, JP, MP, OD; Data Collection: EG; Analysis and Interpretation of data: EG, FB, SM, OD; Manuscript writing: EG; Manuscript editing and Review: EG, FB, SM, JP, MP, OD, CD, ST, YH, MD, BM.

Declaration of Competing Interest

Nothing to disclose.

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Not applicable.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jgo.2023.101442.

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