Evaluation of early nephrostomy in patients with post-renal acute renal failure with advanced Cervical Cancer

Avaliação da nefrostomia precoce em pacientes com insuficiência renal aguda pós renal com Câncer de Colo Uterino avançado

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ABSTRACT
Introduction: Cervical cancer is the fourth most common type of cancer among women, except for cases of non-melanoma skin. However, the state of Amazonas has the highest incidence rate of new cases per year. Objectives: To determine the prognostic impact of early nephrostomy in patients with advanced cervical cancer who present post-renal acute renal failure. Methods: This prospective cohort study was carried out with patients with locally advanced cervical cancer, who evolved with post-renal acute renal failure. Results: 25 patients were included in the study, 52% (13/25) died, 32% (8/25) lost outpatient follow-up and 16% (4/25) returned for follow-up. Of the total, 16% (04/25) underwent renal ultrasonographic reassessment, with 75% (3/4) having unilateral nephrostomy and 25% (1/4) having bilateral. It was not possible to assess the impact of cortical thickness on renal function, due to the lack of indicators used to assess the improvement in renal function. Conclusion: In this study, the relationship between low socioeconomic levels and late diagnosis of cervical cancer was observed. Knowledge of this population's clinical, and socioeconomic profile, and outcomes is essential to guide more robust studies and improve the clinical management of these patients. In addition, promote discussions on the importance of access to information, health services, and preventive measures essential to survival.

Keywords: neoplasia, uterine lap, nephrostomy, acute renal failure.

RESUMO
Introdução: O câncer do colo do útero é o quarto tipo de câncer mais comum entre as mulheres, com exceção dos casos de pele não melanoma. No entanto, o estado do Amazonas tem a maior taxa de incidência de novos casos por ano. Objetivos: Determinar o impacto prognóstico da nefrostomia precoce em pacientes com câncer de colo do útero avançado que apresentam insuficiência renal aguda pós-renal. Métodos: Este estudo de coorte prospectivo foi realizado com pacientes com câncer de colo do útero localmente avançado, que evoluíram com insuficiência renal aguda pós-renal. Resultados: 25 pacientes foram incluídos no estudo, 52% (13/25) morreram, 32% (8/25) perderam o acompanhamento ambulatorial e 16% (4/25) retornaram para acompanhamento. Do total, 16% (04/25) foram submetidos à reavaliação ultrassonográfica renal, sendo 75% (3/4) com nefrostomia unilateral e 25% (1/4) com bilateral. Não foi possível avaliar o impacto da espessura da cortical na função renal, devido à falta de indicadores utilizados para avaliar a melhora da função renal. Conclusões: Neste estudo, observou-se a relação entre baixos níveis socioeconômicos e o diagnóstico tardio do câncer do colo do útero. O conhecimento do perfil clínico, socioeconômico e dos desfechos dessa população é essencial para orientar estudos mais robustos e melhorar o manejo clínico dessas pacientes. Além disso, promover discussões sobre a importância do acesso à informação, aos serviços de saúde e às medidas preventivas essenciais para a sobrevida.

Palavras-chave: neoplasia, colo uterino, nefrostomia, insuficiência renal aguda.
INTRODUCTION

Cervical cancer (CC) is a serious public health problem, especially in developing countries, since the highest rate of this type of cancer is in women of reproductive age and with low socioeconomic status (1,2), in addition to being the fourth most common type of cancer among women worldwide, with 570,000 new cases and 311,000 estimated deaths in 2018 (3). The northern region has the highest number of CC cases in Brazil (20.48/100,000), followed by the northeast region (17.59/100,000) (4) Pap smears and prophylactic immunization, together with the use of barrier methods, are some of the most effective approaches in the diagnosis and prevention of cervical cancer, respectively (5).

Cervical lesions that are considered precursors have, from the cytohistopathological point of view, different degrees of evolution classified as cervical intraepithelial neoplasia (CIN). CIN is presented as a long pre-invasive phase of the disease and is classified into grades I, II, and III, depending on the proportion of the epithelium thickness that presents mature and differentiated cells (4).

Cervical carcinoma has a slow evolution and can also invade the bladder, rectum, and pelvic and para-aortic lymph nodes. The ureter can become enveloped by tumors, and this leads to ureterohydronephrosis and eventually kidney failure. The pattern of pelvic dissemination of cervical carcinoma restricts the use of surgical treatment for early forms (6,7).

Percutaneous nephrostomy (PCN) is a well-established method of diverting urine from obstructed urinary collecting systems or as a temporary treatment before procedures to treat the underlying disease (radiotherapy, chemotherapy, and/or radical surgery). It is very important to select patients for curative treatment. Three significant prognostic factors have been identified that may predict a short survival time after percutaneous nephrostomy in patients with advanced-stage cancer: serum albumin, high-grade hydronephrosis, and several three or more events related to malignant dissemination, such as metastases (lung, liver, bones, retroperitoneum, lymph nodes), ascites and pleural effusion (6,8,9).

METHODS

This is a prospective cohort study, carried out with patients with locally advanced cervical cancer, who evolved with post-renal acute renal failure, attended at FCECON, from March to June 2019. After renal evaluation by ultrasound and analysis based on the laboratory profile, defining the obstructive condition, the patients underwent nephrostomy. Patients with advanced cervical cancer with TNM clinical staging (FIGO) III or IV and with post-renal renal
failure were included in this study. And patients who presented sonographic aspects of chronic kidney disease were excluded.

A comparison was made with the evaluation of renal function before and after nephrostomy, to know the renal and oncological prognosis of the patients, through the values of albumin, creatinine, and creatinine clearance and ultrasonography of the renal parenchyma, to determine at which stage of the disease performing early nephrostomy brings better prognosis to patients.

Through an active search of electronic medical records and anamnesis, epidemiological data were collected (education, origin, and age). As for invasive procedures, these were performed in the radiology sector with the assistance of the FCECON urology team. Epidemiological data from anamnesis, laboratory, and ultrasound were recorded in a specific form. The variables studied were the origin, type of previous treatment performed, age, disease stage, ultrasound, and laboratory findings suggestive of uremia. The project was approved by the Research Ethics Committee on 03/12/2019, under CAAE number: 00609218.0.0000.0004.

3 RESULTS

Between March and June 2019, 25 patients from the Fundação Centro de Controle de Oncologia do Estado do Amazonas (FCECON) were able to participate in the study. 32% (8/25) of them lost outpatient follow-up (3 refused to participate and 5 lost contact), 52% (13/25) died and 16% (4/25) returned for follow-up. Of the remaining 48% (17/25), 76% (13/17) died during the development of the study and 24% (4/17) returned for a renal ultrasound reassessment (Figure 1). 75% (3/4) of the patients who underwent renal function evaluation had unilateral nephrostomy and 25% (1/4) had bilateral nephrostomy. Due to the lack of indicators used to assess the improvement in renal function (glomerular filtration, creatinine, and serum albumin) before performing the procedures in patients who returned, it was not possible to assess the impact of cortical thickness on renal function.
The age of the patients ranged from 26 to 65 years, with an average of 44 years. Of the total number of patients, only 4% (1/25) presented a time greater than 4 months between the cytopathological diagnosis and the performance of the nephrostomy, while 96% (24/25) underwent the nephrostomy between 3 weeks and 3 months after the diagnosis. 92% (23/25) of the patients had incomplete high school as their highest level of education and 8% (2/25) had never attended a teaching unit. 100% (25/25) of the patients reported low purchasing power and none knew how to define their family's per capita income. Regarding the city of origin, 72% (18/25) of eligible patients were from inland cities, and 28% (7/25) were from the capital Manaus (Table 1). The Fundação Centro de Controle de Oncologia do Estado do Amazonas (FCECON) is located in an urban area, in the capital Manaus, Amazonas (Figure 2).

Table 1. The clinical and socioeconomic characteristics of the participants included

<table>
<thead>
<tr>
<th>Variable</th>
<th>Follow-up loss N = 8</th>
<th>Renal ultrasound reassessment N = 4</th>
<th>Death N = 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nefrostomia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bilateral</td>
<td>0 (0%)</td>
<td>1 (25%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>No information</td>
<td>8 (100%)</td>
<td>0 (0%)</td>
<td>13 (100%)</td>
</tr>
<tr>
<td>One-sided</td>
<td>0 (0%)</td>
<td>3 (75%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Age (years)</td>
<td>47 (9)</td>
<td>36 (4)</td>
<td>45 (12)</td>
</tr>
</tbody>
</table>
The time between diagnosis and nephrostomy

<table>
<thead>
<tr>
<th>Time</th>
<th>Absolute frequency</th>
<th>Relative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;3 months</td>
<td>7</td>
<td>(88%)</td>
</tr>
<tr>
<td>&gt;4 months</td>
<td>1</td>
<td>(13%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Origin</th>
<th>Absolute frequency</th>
<th>Relative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capital</td>
<td>0</td>
<td>(0%)</td>
</tr>
<tr>
<td>Inner cities</td>
<td>8</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Economic level</th>
<th>Absolute frequency</th>
<th>Relative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>8</td>
<td>(100%)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scholarity</th>
<th>Absolute frequency</th>
<th>Relative frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete primary education</td>
<td>8</td>
<td>(100%)</td>
</tr>
<tr>
<td>Never studied</td>
<td>0</td>
<td>(0%)</td>
</tr>
</tbody>
</table>

^ Absolute frequency (Relative frequency); Mean (Standard deviation)

Fonte: The author, 2023

Figure 2. Location of the Fundação Centro de Controle de Oncologia do Estado do Amazonas (FCECON)

Fonte: The author, 2023

4 DISCUSSION

Despite the existence of CC control programs in many centers, cervical cancer remains a disease with high prevalence, incidence, and mortality. Every year half a million women are affected by this disease worldwide and 50 percent of them die due to CC (10).

According to the National Cancer Institute (INCA)(4), cervical cancer is the leading cause of cancer death among women living in developing countries. In Brazil, mortality rates from cervical cancer are high, constituting a serious public health problem. According to the
Ministry of Health, rates have been increasing since the past decade, with age-adjusted mortality rates rising from 5.29 per 100,000 women (11).

A study carried out on the prevalence and mortality rates of the condition in the Amazon region (12) showed that the rate for each group of 100,000 women is 40.18, almost three times higher than the Brazilian average, according to Inca (National Cancer Institute) in 2020. As for the national average, there was a decrease in mortality in all regions, with the exception of the interior municipalities of the North Region which, in 2017, had a rate three times higher than that of the Southeast Region, which characterizes one of the reasons for the severity of the disease situation in the state and the need for a greater approach to this topic in scientific circles.

In the period from 2013 to 2020, 48,586 deaths due to malignant neoplasm of the cervix (ICD-9: 179; ICD-10: C55) were registered in the country in the country, of which 2,234 were reported in the Amazon. Prevention policies have different levels of coverage in Brazilian regions, according to socioeconomic conditions, since populations in rural areas, for the most part, have a deficit in access to preventive actions, such as the Pap smear test itself.

The study population consisted of women with a mean age of 44.2 years, and low purchasing power, and 52% (13/25) died, these observations are in agreement with the findings of previous studies, which describe a high mortality rate in women with cervical cancer under 50 years of age (1,13). Such results reflect the findings of a review carried out in 2020, whose most affected population ranged between 25 and 64 years old, with a higher percentage of deaths in the 50-54 age group. In addition, the study draws attention to the North Region, which had the highest death rates and mortality rates (14). Social vulnerability and socioeconomic standard of living play a major role in the late diagnosis of these patients, as these factors are linked to obtaining information and decision-making(15–17).

In the present study, the staging of the clinical condition proved to be an important factor in understanding the prognosis of the population. In a multicenter study involving 89 health institutions (18) it was shown that most women had cervical cancer in stages III or IV at the time of diagnosis. This information shows failures in accessing the health service and may also reflect the education and income profile of the patients, since in our population, the vast majority [72% (18/25)] came from municipalities in the interior, with education below the elementary level.

Nephrostomy is indicated in cases of advanced tumors of the uterus due to the presence of obstructions of the urinary tract in the pelvis, preventing the normal drainage of urine into the bladder (19). Although there is little evidence of nephrostomy as a protective factor for worse renal function outcomes in patients with cervical cancer (20), a comparative study carried
out in 2016 points out the benefits of the technique (21). In our study, 76% (13/17) died, making reassessment impossible, and of these, 76% (10/13) underwent unilateral nephrostomy. In previous studies with nephrostomized patients due to advanced CC obstruction, it was observed in the study by Nakagawa et al. 2011 that 71% (32/45) died and did not return to the survey to reassess the improvement in kidney function, as well as the study by Souza et al. 2016 (13,22).

5 CONCLUSION

In this study, the relationship between low socioeconomic levels and late diagnosis of cervical cancer was observed. The population was composed of young women, with low education and living in cities far from the capital. These women seek care in situations of controlled disease, with clinical signs of unilateral or bilateral acute renal failure, thus requiring percutaneous nephrostomy. The research team performed all procedures uneventfully. However, the critical clinical situation of the patients and the advanced stage of the disease (TNM III and IV) hampered the progression in prognosis even after the completion of the inpatient bypass. This was proven by the high rate of deaths in less than 3 weeks after completion of the nephrostomy. In most cases (and, consequently, deaths), a unilateral nephrostomy was performed. Knowledge of this population's clinical, and socioeconomic profile, and results is essential to guide more robust studies and improve the clinical management of patients. In addition, promote considerations of the importance of access to information, health services, and preventive measures essential to survival.
REFERENCES


