Surgical treatment of skin carcinomas in the Brazilian Unified Health System: costs analysis

Tratamento cirúrgico de carcinomas cutâneos pelo Sistema Único de Saúde: análise de custos

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A B S T R A C T

Objective: To analyze the costs of the surgical treatment of cutaneous carcinomas held in the Plastic Surgery service at a university hospital in patients of the Unified Health System (SUS). **Methods**: we included seventy-one patients recorded their demographic and operation data. For analysis of direct costs we considered the period of patient hospitalization, including human and material costs. **Results**: The average equipment cost per procedure was R$ 324.70, and the mean cost of hospital service, according to the table of SUS, was R$ 193.66. Thus, we obtained an average total cost of R$ 518.36 per procedure. However, the average amount refunded by the SUS per hospital procedure was R$ 429.19. **Conclusion**: Surgical treatment of cutaneous carcinomas generated for the hospital an average deficit of R$ 89.16 per procedure.

Key words: Skin neoplasms. Carcinoma. Surgery, plastic. Fees and charge. Unified health system.

INTRODUCTION

Skin carcinomas are the most common malignancies in humans [1]. Mainly due to the high number of cases, among all types of cancer in Australia in 2001, it was the one generating more spending on treatment, costing the health care system of this country US$ 262 million, or approximately US$ 14.60 per capita [2].

In the United States, the annual expenditure on the treatment of non- melanoma skin cancer amounts to US$ 650 million for the whole population and type of cancer was the fifth to generate more costs [3]. Skin carcinomas also have increasing economic impact in Europe [4]. In Germany, hospitalizations due to them in 2003 cost US$ 281 million [5].

In Brazil, the National Cancer Institute (INCA) estimates that in 2012 and in 2013, the non-melanoma types of skin cancer will have been the most frequent in the Brazilian population, with 134,000 new cases, 63,000 in men and 71,000 in women[6]. Despite being the most frequent neoplasia in Brazil in both genders, it is considered that these figures are underestimated because many suspicious lesions may be removed without diagnosis or even be misdiagnosed [7].

The health care of the population is a problem faced by many countries. Currently, the need for studies to assess the economic impact of health actions has grown [8]. The economic evaluation is important for decision-making regarding the allocation of resources, seeking greater efficiency in their use [9].

Whereas public and private funds for health care are limited, cost analysis and evaluation of results becomes an indispensable part in the development of health policies [10].

The aim of this study was to analyze the costs of the surgical treatment of cutaneous carcinoma, held in a plastic surgery service at a university hospital, in patients of the public Unified Health System (SUS).

METHODS

We conducted a primary, analytical, observational study. The project was approved by the Ethics in Research Committee of the Sapucaí Valley University (protocol 260 / 09).

Study conducted at the Sapucai Valley University – UNIVÁS, in collaboration with the Post-Graduation Program in Translational Surgery, UNIFESP-EPM.

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The series consisted of 71 patients undergoing in-hospital surgical treatment of skin carcinomas by the Unified Health System, at the Department of Plastic Surgery of the Hospital of the Sapucaí Valley University, from August 2009 to August 2010.

Patients included were the ones diagnosed with skin cancer confirmed by pathological examination who underwent surgical treatment by the staff of Plastic Surgery at the surgical center of a university hospital. No patients were included if without a confirmed diagnosis, undergoing treatment in outpatient basis or treated by other services.

The total amount paid by the health system to the hospital per patient was calculated and included hospital services, doctors, daily fees and accompanying pathological examinations. The direct cost is the amount spent by the health system specifically for the treatment; to calculate it the amounts paid by pathological examinations and daily companions are subtracted from the total value. The cost to the hospital was also calculated per patient, including spending on medical fees, with materials and medicines, and also the fee of hospital service provided, which corresponds to the value reimbursed by the SUS to the hospital, a value predefined by the SUS table, which varies depending on the procedure performed.

The cost of the surgical procedure, including human and material costs, was evaluated using the TASY system software for health management. Data on demographics, clinical status and related to the surgical procedure were collected from medical records.

For analysis of results, we used descriptive statistics, with mean, median and standard deviation.

RESULTS

The distribution of the 71 included patients in relation to gender was similar, with a slightly higher frequency of women (52% of cases). Ages ranged from 40 to 90 years (69.8 years) and as for the color the most prevalent was white, in 94.4%.

The most common histological type was basal cell carcinoma. As a whole, 87 tumors were resected and had the diagnosis confirmed, of which 68 were located in the head, six on the neck, nine in the upper limbs, four in the lower limbs, and one in the breast.

The mostly used type of anesthesia was local anesthesia with sedation. Length of hospital stay was one day to 40.8% of patients, two days for 25.4% and three to 33.8%. Resection followed by grafting and resection followed by Z-plasty were the most frequently used techniques, both in 26.8% of procedures, followed by simple resection in 15% of cases.

To obtain the total cost of the procedure, the values of medical fees, pathological tests, materials, medicines and daily values of accompanying family members were added. Medical fees were paid according to the type of operation, ranging from R$ 28.20 to R$ 344.25, mean R$ 115.77. The amount reimbursed by SUS for pathological examinations per patient ranged from R$ 48.00 to R$ 336.00, mean R$ 122.35.

According to information contained in the operating records, spending on medicines and materials ranged from R$ 43.06 to R$ 428.38 per patient, with an average of R$ 97.92. Only patients over 60 years of age have the right to by accompanied by a family member, R$ 4.00 being the value paid by the SUS for their daily stay. In this study, 32 patients required a companion, totaling 43 such daily fees.

The sum of these costs led to an average total cost of R$ 324.70 per procedure. Hospital service fees were not included. It represents the value that the institution should receive according to the table of SUS, excluding the aforementioned fees to cover costs of cleaning staff, nursing, electricity, water, rent, equipment, etc.. This rate changes according to the type of procedure and its complexity, ranging from R$ 97.28 to R$ 437.96, with an average of R$ 193.66.

Adding the average total cost per procedure (R$ 324.70) to the average rate of hospital services provided by the SUS (R$ 193.66), we have average total amount of R$ 518.36 per procedure. However, the average amount paid by SUS to the hospital during the study period was R$ 429.19 per procedure. Therefore, the hospital had an average deficit of R$ 89.16 per patient (Table 1).

DISCUSSION

It's common sense that skin cancer generates direct and indirect costs for governments, health plans and a significant number of patients [11-19].

Despite the importance of analyzing the financial impact of the treatment of skin carcinomas, there are no detailed estimates of the costs to the national health care system, since information about their diagnosis and treatment are not systematically recorded. Economic evaluation, as well as strict records of incidence, location, histological type and sociodemographics of the more frequently affected population are important for decision making regarding the allocation of resources, seeking greater efficiency in their use [9].

Once diagnosed, the treatment options for cutaneous tumors include both surgical and non surgical procedures. Regardless of the approach used, the goals are the complete extirpation of the tumor, preserving the maximum amount of normal tissue and minimal cosmetic damage. The choice of treatment depends on location, age, comorbidities and risk factors of tumor recurrence [20,21].

Surgical treatment in particular depends on the location and size of the lesion, the characteristics of the skin, the shape of the lesion, the surgeon's familiarity with certain techniques, as well as their creativity in planning

Table 1 – Mean values in R$ per patient.

		R$
CASH IN	Amount paid by the SUS by procedure	429.19
CASH OUT	Medical Fees	115.77
	Pathological Examinations	122.35
	Daily companion	5.41
	Materials and medications	97.92
	Total Cost	324.70
BALANCE	What's left (what the SUS paid minus total cost)	104.50
	What should be received as hospital fees, according to the SUS table	193.66
	Balance (what the SUS paid less than what the hospital should receive)	- 89.16

the surgery, and spending grow according to the degree of disease, operating time, length of hospital stay, need of companion, comorbidities and occurrence of complications [22,23].

The surgical treatment of skin cancer is a relevant problem in the management of health sector and requires considerable financial demand for its realization [5]. Public hospitals face huge administrative challenge to treat these patients because, depending on the case, the balance is negative after the procedure. To avoid this impasse, among others, it is necessary to readjust the values reimbursed by the SUS based on a consistent model with actual expenditures and educate professionals involved so there is no waste and thorough record of the materials used is carried out.

Actions of primary prevention through protection against solar radiation are effective and inexpensive, and should be part of education in workplaces, schools and health facilities programs. Moreover, as the disease is characterized by the cumulative effects of exposure to risk factors, the campaigns should have their focus on children, adolescents and their parents [23].

Secondary prevention through careful dermatological examination should also be performed. The skin is the organ of easy access to self-examination and medical examination and allows the diagnosis of cancer in the early stages. As the risk of disease increases with age, 80% of all these cancers are diagnosed from 55 years on. Thus, efforts should be concentrated in this age group, so that the diagnosis is done at early stages and require less complex treatments, which will reflect in lower morbidity and lower costs per patient [18].

Improving the current situation and administration of funds goes along the inevitable path of building a data network that enables real socio-demographic analysis of the epidemiology of skin carcinoma and of treatment costs through a model more compatible with the country's reality, and strategies for reversing underpricing [3].

Thus, as duly registered new data become available, it becomes feasible to evaluate trends in management, different options and costs resulting from the treatment. This information would provide greater effectiveness of efforts to decrease costs associated with the treatment of this disease, which is an increasingly important public health problem [24].

In conclusion, the surgical treatment of cutaneous carcinomas treated by SUS generated for the hospital an average deficit of R$ 89.16 per procedure.

R E S U M O

Objetivo: *analisar os custos do tratamento cirúrgico de carcinomas cutâneos, realizado em serviço de Cirurgia Plástica de hospital universitário, em pacientes do Sistema Único de Saúde (SUS).* ***Métodos:*** *setenta e um pacientes foram incluídos e registrados seus dados sociodemográficos e da operação. Para análise de custos diretos foi considerado o período de internação do paciente, incluindo custos materiais e humanos.* ***Resultados:*** *o custo material médio por procedimento foi R$.324,70, e o valor médio da taxa de serviço hospitalar, segundo a tabela do SUS, foi R$.193,66. Com isso, obteve-se um custo total médio de R$.518,36 por procedimento. Entretanto, o valor médio repassado pelo SUS ao hospital por procedimento foi R$.429,19.* ***Conclusão:*** *o tratamento cirúrgico dos carcinomas cutâneos gerou para o hospital, um déficit médio de R$.89,16 reais por procedimento.*

Descritores: *Neoplasias cutâneas. Carcinoma. Cirurgia plástica. Honorários e preços. Sistema único de saúde.*

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