INTRODUCTION
Malignant transformation in burn scars was described by Jean-Nicholas Marjolin in 1828. Nowadays, the expression “Marjolin’s ulcer” is used when malignant neoplasias, especially squamous cell carcinomas, occur on chronic ulcers, fistulas and scars of various etiologies, burn scars being the most common cause. Clinical findings that suggest malignant transformation included ulcers that do not heal, increase in lesion consistency, vegetation, unpleasant odor, elevated borders and formation of nodules on the scar. In the majority of times, patient seeks the physician too late, when significant alterations have
already occurred. It is not rare for the physician to underestimate the cases, when once more precious time is lost.

Considering the importance of early diagnosis, the mutilations a late diagnosis can generate and the scarcity of references on the matter, cases observed in the Clementino Fraga Filho University Hospital over a period of 13 years are reported.

In the period between 1990 and 2003, 12 cases of squamous cell carcinoma that had developed on scars or chronic ulcers were diagnosed. Patients were evaluated according to age, gender, skin color, profession, location of the lesion and its time evolution from primary lesion. Patients underwent the following laboratory tests: blood count, velocity of hematocrit, serum sodium, potassium and creatinine, blood urea nitrogen, radiograph of bones in the affected area, and lesion histopathological examination. Computerized tomography of the lesion site was performed in two cases. Two other cases were submitted to bone biopsy. Follow-up was made in 11 of the 12 patients over a period lasting from five months to two years.

CASE REPORTS

Cases happened in five females and seven males aged between 38 and 86 years. Evolution time from scar to squamous cell carcinoma onset ranged from 10 to 50 years (Chart 1).

Diagnosis of squamous cell carcinoma was established on a clinical-laboratorial basis. Areas of carcinomatous transformation were ulcerated-vegetated, painful, brittle and many times had purulent secretion and foul smell.

Clinical hypothesis of squamous cell carcinoma was confirmed by means of biopsy of specimens of vegetating lesions suspected because of the presence of irregular, anastomosed strings of polygonal epithelial cells with variable proportions of atypical mitoses invading dermis. In the more differentiated forms, there was keratinization in the shape of horny pearls.

Radiograph revealed lytic lesions in the bones of four patients, and chronic osteomyelitis in one, characterized by images of sequestration, involucres, lytic and sclerotic lesions. Cases 5 and 7 underwent computerized tomography of lesion site. Cases 1 and 2 underwent bone biopsy.

Amputation was carried out eight times: cases 1, 2, 3, 4, 6, 8, 11 and 12. Case 5 was treated with lesion exeresis. Case 7 was considered beyond therapeutic possibilities. Cases 9 and 10 underwent local resection with self-grafting and patch rotation, respectively (Chart 1).

DISCUSSION

Development of a squamous cell carcinoma (SCC) in a chronic ulcer or a scar is a relatively rare event. Estimated percentage of scars that will suffer malignant degeneration is 2%. Mean latency between injury time and documentation of neoplasia is 30 years, even though there is a possibility of acute evolution, with a maximal time of one year, especially in cases occurring on burn scars. Patient age

<table>
<thead>
<tr>
<th>Cases</th>
<th>Skin color</th>
<th>Age (years)</th>
<th>Gender</th>
<th>Profession</th>
<th>Time</th>
<th>Evolution</th>
<th>Primary</th>
<th>Location</th>
<th>Bone</th>
<th>Node</th>
<th>Therapy</th>
<th>Follow up</th>
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<tbody>
<tr>
<td>1</td>
<td>nw</td>
<td>79</td>
<td>F</td>
<td>housewife</td>
<td>10</td>
<td>years</td>
<td>AU</td>
<td>RLL</td>
<td>m</td>
<td>N</td>
<td>A</td>
<td>12 months</td>
</tr>
<tr>
<td>2</td>
<td>w</td>
<td>86</td>
<td>F</td>
<td>housewife</td>
<td>50</td>
<td>years</td>
<td>trauma</td>
<td>RLL</td>
<td>m</td>
<td>N</td>
<td>A</td>
<td>6 months</td>
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<td>3</td>
<td>nw</td>
<td>68</td>
<td>M</td>
<td>Electrician</td>
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<td>BS</td>
<td>R foot</td>
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<td>N</td>
<td>A</td>
<td>5 months</td>
</tr>
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<td>4</td>
<td>w</td>
<td>38</td>
<td>M</td>
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<td>BS</td>
<td>L foot</td>
<td>N</td>
<td>m</td>
<td>AR</td>
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<td>LUS</td>
<td>SR</td>
<td>m</td>
<td>N</td>
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<td>BS</td>
<td>RUL</td>
<td>N</td>
<td>N</td>
<td>A</td>
<td>5 months</td>
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<td>86</td>
<td>M</td>
<td>Brick layer</td>
<td>17</td>
<td>years</td>
<td>FS</td>
<td>RGR</td>
<td>m</td>
<td>m</td>
<td>BPT</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>w</td>
<td>71</td>
<td>M</td>
<td>Fireman</td>
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<td>N</td>
<td>A</td>
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<td>N</td>
<td>R</td>
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<td>RLL</td>
<td>N</td>
<td>N</td>
<td>R</td>
<td>6 months</td>
</tr>
<tr>
<td>11</td>
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<td>61</td>
<td>F</td>
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<td>20</td>
<td>years</td>
<td>VU</td>
<td>RLL</td>
<td>CO</td>
<td>N</td>
<td>A</td>
<td>6 months</td>
</tr>
<tr>
<td>12</td>
<td>nw</td>
<td>58</td>
<td>M</td>
<td>nickeling</td>
<td>3</td>
<td>months</td>
<td>VHD</td>
<td>RLL</td>
<td>N</td>
<td>N</td>
<td>A</td>
<td>4 months</td>
</tr>
</tbody>
</table>

Conventions
A: amputation; AR: amputation + radiation therapy; w: white; LUS: lying ulcer scar; FS: fistula scar; BS: burn scar; R: right; L: left; BE: bullous epidermolysis; F: female; BTP: beyond therapeutic possibilities; m: metastasis; M: male; VHD: Virshowian Hansen’s Disease; LL: lower limb; UP: upper limb; N: normal; nw: non-white; RGR: right gluteus region; CO: chronic osteomyelitis; R: resection; SR: sacral region; AU: angiodermic ulcer; VU: venous ulcer.

at the time of injury influences latency time, which is inversely proportional to patient’s age at the time of burn.5

These tumors have a more aggressive evolution, higher possibility of local relapse and of node metastasis.6 Rate of metastases originating from squamous cell carcinomas on scars is 35% to 50%, much higher than the possibility of metastasis from a SCC originated from actinic damage (2 to 6%).5,7

Most patients are already in advanced stages of disease at the time of diagnosis of Marjolin’s ulcer, which has been proven both in the present work and in literature (Charts 1 and 2).8-11 This happens as a consequence of both clinical and histopathological difficulties in diagnosing a squamous cell carcinoma on a scarred or ulcerated lesion. In cases of Marjolin’s ulcer, tumor is usually well differentiated and may emerge over an area of previous pseudo-epitheliomatous hyperplasia, making diagnosis even more difficult. Pseudo-epitheliomatous hyperplasia corresponds to an increase in epidermal thickness, with proliferation of irregular strings of squamous cells, minimal or absent cytological atyp, associated to mononuclear inflammatory infiltrate.4,12

Even with the aid of differentiation criteria, distinction between these two entities can be of Paramount difficulty when only a single histological slice is examined. Multiple biopsies from different sites should be carried out in the suspected lesion, due to the difficulty in distinction between pseudo-epitheliomatous hyperplasia and squamous cell carcinoma.4,10

A variety of factor have been observed to predispose to malignant transformation of a chronic lesion, among them, prolonged duration, trauma and constant irritation, chronic infection with or without osteomyelitis, inadequate hygiene, environmental factors and genetic predisposition.10

Defining factor for therapy were primary location, lesion extension, patient’s age and whether metastasis was present or not. Amputation was carried out in eight cases: in cases 1 and 2 because of infralesional bone metastasis, confirmed by bone biopsy; in case 3,6,8,11 and 12 because non-resectability owing to great lesion extension. In case 4, left foot amputation was performed, associated to radiation therapy at the site of metastasis, due to great lesion extension and presence of lymph node metastasis, as confirmed histologically. Case 5 was treated with lesion exeresis, since it presented an infralesional metastasis extending to sacral vertebrae, coccyx and sacroiliac joints. Metastases were demonstrated by computerized tomography of the sacrococcygeal region. Case 7 was considered to be beyond therapeutic possibilities in virtue of advanced age associated to the presence of bone and soft tissue metastasis, as confirmed by panoramic hip radiograph and computerized tomography of the gluteus region, besides the presence of node metastasis in the right inguinal chain, as confirmed by thick-needle puncture. Cases 9 and 10 underwent local resection with self-grafting and resection with patch rotation, respectively (Chart 1).

The present casuistry exhibits a balance in gender distribution, predominant age range above 40 years, evolution time over 10 years and main location in lower limb. Results are similar to those of a previous casuistry from the same department.13

In the consulted literature, profile is of female gender predominance, age range between 27 and 82 years, evolution time from 4.5 months to 25.4 years, main location in lower limb, and primary location varying between scar and ulcer. Therapy included lesion

<table>
<thead>
<tr>
<th>Author, year</th>
<th>N. of cases</th>
<th>Age (mean)</th>
<th>Gender F / M</th>
<th>Evolution time</th>
<th>Primary lesion</th>
<th>Location</th>
<th>Therapy</th>
<th>Follow up</th>
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<tbody>
<tr>
<td>Baldursson B et al, 1995.9</td>
<td>23</td>
<td>82 years</td>
<td></td>
<td>25,4 years</td>
<td>VU</td>
<td>LL</td>
<td>A + RT</td>
<td>8,5 years</td>
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<td>Baldursson B et al, 1999.10</td>
<td>25</td>
<td>78,5 years</td>
<td>9/16</td>
<td>22,1 years</td>
<td>UVVU</td>
<td>LL</td>
<td>A + RT</td>
<td>3 years</td>
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<td>27 years</td>
<td>3/1</td>
<td>6 months</td>
<td>RDBE</td>
<td>LL and UL</td>
<td>A + E</td>
<td>2 years</td>
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<tr>
<td>Kontochristopoulos G et al, 2000.12</td>
<td>2</td>
<td>73 years</td>
<td>1/1</td>
<td>12,5 years</td>
<td>VHD</td>
<td>LLL</td>
<td>E + RT</td>
<td>1 year</td>
</tr>
</tbody>
</table>

Conventions
A: amputation; E: exeresis; RDBE: recessive distrophic bullous epidermolysis;
VHD: Virchowian Hansen’s Disease
LL: lower limb; LLL: left lower limb; UL: upper limb; RT: radiation therapy
VU: venous ulcer

excision, excision with grafting, amputation and radiation therapy (Chart 2).

It should be highlighted that: 1. When a scar or chronic ulcer undergoes modification in its clinical evolitional aspect, becoming painful, infiltrated, hardened, vegetating or secreting, the presence of a malignant transformation should be thoroughly investigated.

2. Therapy should be decided on an individual basis, because it involves multiple clinical and laboratory aspects.

REFERENCES


MAILING ADDRESS:
Vanessa Oliveira Zagne Bauk
Av. Sete de Setembro, 207 - apto 1302 - Icaraí
24230-251 – Niterói - RJ - Brazil
Tel.: +55 (21) 2703-9981 / Fax: +55 (21) 2704-5623
E-mail: vzagne@urbi.com.br

358 Bauk VOZ, Assunção AM, Domingues RF, Fernandes NC, Maya TC, Maceira JP.