

## **Female tabagism associated mastitis: a case report related to low quality cigarettes consumption in Magé, Rio de Janeiro**

**Mastite associada ao tabagismo feminino: relato de caso relacionado ao consumo de cigarros de baixa qualidade em Magé, Rio de Janeiro**

**Mastitis asociada al tabagismo femenino: reporte de un caso relacionado con el consumo de cigarrillos de baja calidad en Magé, Rio de Janeiro**

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### **Abstract**

**Objective:** to report a case of periductal mastitis, whose initial presentation has been necrosis of nipple in a client of the Public Unified Health System (SUS) in the city of Magé / Rio de Janeiro. The public healthcare system client had reported prolonged use of cheap cigarettes which she used to smoke and which she could afford. **Method:** case report qualitative study, anchored in anamnesis and physical examination with emphasis on patient social history and pathophysiology of benign breast mastitis related to tobacco use. **Result:** According to anamnesis and physical

examination, it is suggested that a chronic inflammatory process in breast ducts had occurred. A chronic breast inflammatory process may be linked with toxins eliminated in cigarette combustion, nevertheless an overwhelming patient social vulnerability and issues concerning self-care must be regarded by primary health care nursery. *Conclusion:* Quitting smoking may imply multifactorial aspects, including willpower, psychiatric and somatic disorders, poverty and little access to healthcare system in Brazil. Body care should have been emphasized concerning medical and nursing management. In Magé, mastitis diagnosis associated with tobacco use has been somewhat frequent, and recurrent non-puerperal breast abscess complicates most cases. Often, poor female patients with low self esteem have consumed cheaper cigarettes, perhaps less subject to appropriate quality control.

**Keywords:** Mastitis; Tobacco using disorder; Abscess; Neoplasms.

### Resumo

*Objetivo:* relatar um caso de mastite periductal, cuja apresentação inicial foi necrose de mamilo em uma cliente do Sistema Único de Saúde (SUS) na cidade de Magé/Rio de Janeiro. A usuária do sistema público de saúde relatou uso prolongado de cigarros lícitos e baratos que ela tanto fumava quanto comprava. *Método:* pesquisa qualitativa na categoria relato de caso, com foco na anamnese e exame físico e ênfase na história social e fisiopatologia da mastite relacionada ao tabagismo. *Resultado:* Realizados anamnese e exame físico, sugere-se a ocorrência de processo inflamatório crônico nos ductos mamários. Um processo inflamatório crônico da mama pode estar relacionado às toxinas eliminadas na combustão do cigarro, entretanto, a grande vulnerabilidade social da paciente e questões relativas ao autocuidado devem ser consideradas pela equipe de atenção primária à saúde. *Conclusão:* Parar de fumar abrange aspectos multifatoriais, incluindo força de vontade, transtornos psiquiátricos e somáticos, pobreza e falha no acesso ao sistema único de saúde brasileiro. O cuidado com o corpo merece atenção de médicos e enfermeiros. Em Magé, o diagnóstico de mastite associada ao tabagismo tem sido um tanto frequente, e o abscesso mamário não puerperal recorrente complica a maioria dos casos. Não raro pacientes do sexo feminino pobres e com baixa auto-estima consomem cigarros de preço muito reduzido, talvez menos sujeitos a controle de qualidade adequado.

**Palavras-chave:** Mastite; Tabagismo; Abscesso; Neoplasias.

### Resumen

*Objetivo:* relatar un caso de mastitis periductal, cuya presentación inicial ha sido necrosis en el pecho en una cliente del Sistema Público Único de Salud (SUS) en la ciudad de Magé / Rio de Janeiro. La cliente del sistema de salud pública había informado el uso prolongado de cigarrillos baratos que solía fumar y pagar. *Método:* estudio cualitativo reporte de caso, relacionado a la anamnesis y examen físico y con énfasis en la historia social de la paciente y fisiopatología de mastitis benigna relacionada con el tabaquismo. *Resultado:* Según la anamnesis y el examen físico, se sugiere que ocurrió un proceso inflamatorio crónico en los ductos mamarios. Un proceso inflamatorio mamario crónico puede estar relacionado con las toxinas eliminadas en la combustión del cigarrillo, sin embargo, la vulnerabilidad social de la paciente y las cuestiones relacionadas con el autocuidado deben ser consideradas por la atención primaria de salud. *Conclusión:* Dejar de fumar puede implicar aspectos multifactoriales, incluyendo fuerza de voluntad, trastornos psiquiátricos y somáticos, pobreza y poco acceso al sistema de salud en Brasil. El cuidado del cuerpo debe ser enfatizado en el manejo médico y de enfermería. En Magé, el diagnóstico de mastitis asociada al tabaquismo ha sido algo frecuente, y el absceso mamario no puerperal recorrente complica la mayoría de los casos. A menudo, las pacientes pobres con baja autoestima han consumido cigarrillos más baratos, posiblemente menos sujetos al control de calidad adecuado.

**Palabras clave:** Mastitis; Tabaquismo; Absceso; Neoplasmas.

## 1. Introduction

Mastitis, in the form of a non-puerperal breast abscess, has the areolar region as the main location with a tendency to recurrence and formation of areolar fistulas. The main etiologic agents are staphylococci and bacteroids. Smoking as a predisposing factor has been raised in several studies, probably determining areolar circulatory changes. There is also, due to smoking, an increase in the peeling of the ductal epithelium with terminal obstruction, facilitating the outbreak of an infectious process. The nipple then inverts with maceration of the epithelium and consequent fibrosis (Avelar, 2008). Apart from puerperium subareolar abscess, the normal one- or two-cell layer of cuboidal epithelium of the distal duct transforms into squamous epithelium. The breast tissue reacts to the extruded keratin as a foreign substance, prompting macrophages to fuse and form foreign-body giant cells as they try to remove the debris. Invasion of bacteria can then lead to the development of a subareolar abscess (Kasales et al, 2014).

As a matter of fact, social aspects must also be regarded if we consider that smoking as the pathologic mastitis basis has several reasons, including anxiety, poverty and lack of politics involving quitting smoking. Identifying policies that can

improve life expectancy and reduce income-based and geographic-based inequalities in life expectancy is of major interest, which deserve analysis in terms of the case being reported. Tobacco smoking is a leading preventable risk factor for death in Brazil, although quality of life and morbidity be emphasized in the study instead of longevity. Tobacco control measures—including fiscal measures such as excise taxes—reduce tobacco smoking through reduced smoking initiation and increased smoking cessation.

Nevertheless, increasing tobacco smoking taxes may lead addict individuals to consumption of low quality control products as well as in the index case under report (Pieper, 2003). In recent years, Brazil has adopted a policy of increasing excise taxes on cigarettes, besides a policy of minimum prices per pack (Pinto et al, 2021). Concerning tobacco use in another country such as Malaysia, productivity losses derive from a combination of premature mortality, morbidity-associated work absences (absenteeism) and reductions in productive capacity while at work, ie, poor performance (Tan et al, 2020).

Mastitis may render low quality of life and poor esthetics; finding breast surgeons far from urban areas is difficult and even if the patient succeeds in finding a specialist doctor, other problems are created such as absence from work as the issue may involve a young client and poverty arises. For this reason, primary care health assistance services must be addressed. First of all, a nursing consultation would include a non fragmented view of the individual, concerning self esteem, care of own body and spirituality. Wounds healing also involves nursing care, which would perhaps have rendered a medical specialist management unnecessary. The reasons why the client heavily smokes had not been discussed, tobacco quitting groups had not been available.

Conversely, quitting smoking policies exist in Magé; however, the city is relatively far from Rio de Janeiro state capital, leading to difficulties concerning medical specialist availability. At the level of primary care in Mage, a tobacco use department care is offered; nevertheless education on health in terms of propaganda that fits cultural background of poor people lacks or is insufficient. Smoking addiction treatment exists in Brazil with government funding, although it is National Cancer Institute centered. This health institute is located in the capital of Rio de Janeiro, offering a high level quality of assistance. However, National Cancer Hospital in Brazil aims at cancer care. Public healthcare system in Brazil is complex and better structure and state control over health is still necessary despite the fact that it is more than thirty years since SUS (Public Healthcare System in Brazil) has been created.

Although a smoking specialist be available at healthcare system SUS, it is presumed that high smoking relapse rates occur even in the oncology setting, which indicates the need to provide such support to those who report recently quitting smoking as well as those who report being current smokers (Warren, 2021). Besides, if social vulnerability is a point, a stronger social and psychological support be essential, even though cancer history is not emphasized, despite lifetime risk related to the mastitis also exists. Smoking encompasses other diseases, not only breast diseases but many others, including cardiovascular organs serious diseases, stroke, heart attacks, sexual dysfunction, high risk pregnancy, depression and spiritual suffering.

In terms of tobacco use cessation, therapies and medical specialist consultations have been made available in Brazilian United Health System, as it has been previously mentioned, including centers at the referred client living district. Electronic cigarettes for quitting smoking, for example, may help smokers; however do not compound smoking cessation Brazilian consensus, as it can even worsen smoking prevalence indexes since they are attractive to young people due to their flavor and cultural habits. Besides, no difference is found upon cessations and smoking reduction between eletronic cigarette (e-cigarette) and nicotine replacement therapy users, according to some Brazilian authors as well (Pound,2021). In humans, reports from electronic devices users indicated irritation in the mouth and throat, coughing, headache, dyspnea and vertigo. Studies also suggest a potential carcinogenic effect of electronic cigarette emissions (Silva, 2019).

National Cancer Institute (INCA) in Brazil took over coordination of the National Tobacco Control Program nationwide measures in 1989 (Portes, 2021). For every penny invested in marketing by the tobacco industry, Brazil has an expenditure on treating tobacco-related diseases 1.93 times higher than the money invested by the industry (Szklo, 2020). Nevertheless, the policy does not suffice and in some regions illegal cigarette trade remains a practice, leading to diseases other than lethal cancers, which may not obviate life expectancy, hurting otherwise quality of life. The hospital INCA treats addiction to cigarettes proficiently, nevertheless it is located in the capital; thus SUS decentralization comes up as an issue, as smoking control management, which must be accessible, deserves attention at other cities and countryside; though laws exist around the theme, implementation measures are scarcely observed.

As the following reported case concerns a heavily smoking women, we shall profoundly analyze social and individual vulnerability that has been pointed out above, such as the lack of medical and nursing specialists in distant geographic areas. Magé counts on psychiatrists and specialized mental health nurses, a tobacco control policy is also available; however, personal health education, self care and public health care system organization and legislation still lack appropriate coordination. Acquiring some level of risk perception associated with their current behavior in order to motivate smoking cessation is an issue associated to self care and nursing work upon client motivation and self-esteem (Szklo, 2009). In contrast, smoking is not considered an addiction from the patient point of view and beyond pathological issues, patient social history, self care and SUS efficacy are subject to discussion throughout this study.

## 2. Methodology

The case study is a research method that generally uses qualitative data, collected from real events, with the objective of explaining, exploring or describing current phenomena inserted in their own context ( Yin, 2009). In this terms, the patient was interviewed and examined in a proper room, so as to collect piece of information, comparing an individual mastitis evolution to what is written by most specialists. The discussion should emphasize the priority and uniqueness of the report, the accuracy of the diagnosis and its validity compared to literature data, and subsidies to raise new perspectives, applications or knowledge with the same (Yoshida, 2007). Thus, the study matches characteristics of a case report since an individual history is analyzed, regarded that financial and social issues, beyond mastitis physiology and cigarette toxin exposure are al cited.

After authorization by Ethics Committee (CEP) by UFF (Federal Fluminense University), the case has been thoroughly detailed, including underneath image of initial presenting breast lesion. Authorization from CEP encompassed Magé hospital and patient Informed Consent. Approval on CEP has been registered under numbers CAAE 12124619.3.0000.5243. In outpatient basis, the interview had been performed by a physician. There was agreement upon answering questions related to her disease and partial exposure of her body image. Her voice has not been recorded. She returned to medical office at Vereador Hugo Braga Hospital after three weeks and reported the sense of well being due to prompt wound healing with local measures, antibiotics and use of less cigarettes throughout the days. Hospital director, patient consensus and Plataforma Brasil (Brazilian ethics committee office) agreements were signed and for this reason the study continued as a case report of a single female SUS client.

## 3. Results and Discussion

The regarded case poses thus an atypical clinical presentation of a left breast inflammatory unrelated to delivery. The patient's breast when she first attends SUS (United Health Public System) reveals left breast nipple necrosis beyond a local cellulitis. Physical examination reveals left breast skin hyperemia and 7 cm ( seven centimeters) areolar ipsilateral tumor . Left axillary chain lymph node was palpable, despite its soft consistency without any inflammatory signs. Right

breast physical examination was regarded as normal, and likely other lymph node chains such as right axillary one, supraclavicular one and cervical ones on either side as well. Her age was 49 years old, a householder, a smoker, living in Magé / Rio de Janeiro (Brazil) and breast cancer family history is ruled out, as well as other organ neoplasms. The patient had been healthy and no other comorbidity was held otherwise mastitis and cigarette smoking. In terms of gynecologic and obstetric anamnesis, she had had four vaginal childbirths. Last menstruation had been twelve months before medical specialist consultation. Contraceptive use was not declared as well. Heart rate, systemic arterial pressure and temperature were neither altered. Leucocyte blood count was normal. Blood biochemical exam and HIV serology were both unavailable.

The patient lived in a house with three rooms; used to smoke 20 (twenty) low price cigarettes a day. There was not signs of psychiatric illness, nevertheless had to work to support her family, working without formal contract. Self esteem seemed to be reasonable; body care was poor, as well as notion on hygienic habits. Educational and scholar level was also low. Care was not given to going to the doctor or dentistry specialists. Nutritional level was also good on physical examination, but vitamin and caloric intake balance had not been detailed.

Mammography exam was unavailable in that hospital institution; nevertheless, breast ultrasound showed tubular hypoechoic image within the left breast, as well as hypoechoic nodule also in areolar region, carrying heterogeneous content, dimensions five square centimeters, irregular edges, suggesting abscess presence altogether. Category (Breast Imaging Reporting and Data System) was designed 4 (four) and thus histopathological diagnosis was concerned.

Core biopsy was promptly undergone since breast neoplasia was a hypothesis. Histopathological diagnosis revealed breast ductal and lobular tissue surrounded by chronic granulomatous inflammation and presence of giant cells. Neoplasia was excluded. Fungus, bacterial and mycobacterial cultures also rendered negative. No other surgical intervention was undertaken, except for serial dressing and topical cream use. Medical treatment also included oral antibiotic (levofloxacin), topic fatty acids and collagenase ointment. Outcome was excellent and the next two weeks local left breast inflammatory and necrotic tissue were no more observed. Breast palpation turned to normality. Examination demonstrated left breast deformity for absence of areola and nipple and a retracting scar that were all patient remaining problems. Plastic surgeon followup in Rio de Janeiro or at other nearby city was afterwards recommended. Once left breast wound had been healed, however, the patient abandoned treatment and follow-up. Further surgical treatment had been proposed in order to obtain a larger sample and correction of left breast deformity, which was likely incomprehensible to the patient presumably as a consequence of her low educational level and the perception that once necrosis vanished, she had been already cured.

**Figure 1** - breast areolar complex necrosis related to chronic mastitis.



Source: Authors.

Reflection has come up with difficulty in access to medical specialists in SUS, which can occur in the countryside in Rio de Janeiro state, Brazil. The patient has had her first contact with a breast surgeon in advanced stages, concerning morbidity and from an aesthetic point of view. We also mention the low quality control of products in common use such as some types of cigarettes regarding less urbanized areas. Smoking is currently considered a silent pandemic, the most important public health problem and the main preventable cause of death (Granville, 2015). The more smokers feel threatened by their given risk behavior, the more they tend to establish a close relationship between short-term risk perception and poor self-perceived health status. It is estimated that approximately 70% (seventy per cent) of smokers want to stop smoking. However, few succeed, and, of those that do, most require five to seven attempts before definitively dropping the habit (Rondina, 2007). In contrast, in this case report we felt little interest of the patient towards quitting smoking. What was bothering her was a dark nipple scar; and once it has resolved, remaining smoking was not disturbing.

Even though plenty of regulations exist and ameliorate around cigarettes, problems arise. High taxes involving manufacture may not control use of cigarettes; conversely poor people tend to pursue illegal products due to lower prices. Illegal cigarettes in Brazil, excluding marijuana, for example are subject to contain substances, microorganisms and a variety of toxins that harm breast health and other organs. Anxiety, lack of dignity in living, unsuitable feeding and clothing lead people to a high-level and disturbing stress that cigarettes could immediately alleviate. Beyond social vulnerability, mental diseases may be an implication that lead people to cigarette craving.

Concerning biomedical model and health assistance therefore, mastitis is assumed to be a benign disease associated with inflammation of the breast ducts. Smoking can be a causative factor. Emphasis is also necessary in terms of benign breast diseases diagnosis and follow-up, since morbidity is incremented if treatment is postponed. Although metastasis is not a result, paradoxically to cancer, benign breast diseases may pose an equally poor outcome, provided that local deformities, absence from work and overwhelming poverty arise. Issues involving tobacco use, social vulnerability are crucial; however, mastitis biological outcome and tendency to deformities is of utmost importance as well. For this reason, epidemiology, pathophysiology and microbiology of mastitis aspects should be considered.

Recurrent areolar breast abscess with fistula is non-lactational mastitis, of a chronic and recurrent character, which evolves as a fistula to periareolar skin. It affects young women and leads to anatomical changes due to fibrosis and local scarring. Among various risk factors for such breast abscesses, smoking stands out, which may be related to the direct ischemic action of nicotine, to tissue hypoxia caused by the action of carbon monoxide in the dissociation of oxygen from hemoglobin, or indirectly by the interference in estrogen metabolism and prolactin (Pieper, 2003). Ductal mastitis is thus a distinct benign breast condition of unknown etiology. Mass, abscess and fistula are most common manifestations of the disease. Wide surgical excision, fistulectomy and extended excision with transfer of a random breast dermo glandular flap are effective surgical treatments for different type of periductal mastitis (Zhang, 2018).

The median age for periductal mastitis is generally 36 years. A subareolar breast mass seems to be the most frequent symptom. The most common clinical manifestations remain mass, nipple retraction, abscess skin ulceration, and mammary duct fistula. Patients may suffer from prolactinoma. Chronic use of medications for psychiatric diseases may be a history item. A few patients refer smoking. Some patients are highly suspected to have breast cancer before surgery. After 3 years median follow-up, patients may recur from periductal mastitis (Cairo, 2018).

Smoking and infection by *Corynebacterium kroppenstedtii* remain risk factors for idiopathic periductal mastitis recurrence (Michael, 2018). *Corynebacterium kroppenstedtii* is a lipophilic *Corynebacterium* first described in 1998 after isolation from a sputum specimen. Association with breast conditions, especially recurrent granulomatous mastitis, was noted subsequently and it may succumb to ceftriaxone, ampicillin clavulanate and vancomycin (Paviour, 2002). Initially seen in predominantly Maori and Pacific Islander multiparous, postlactating women, *C. kroppenstedtii* breast infection has since been

reported throughout the world, including in nulliparous women. Additionally, emerging data suggest that hyperprolactinemia is a modifiable risk factor for these infections (Saraya, 2019).

Differential diagnosis with inflammatory carcinoma of the breast issues, nevertheless, the latter would not have responded positively to systemic and topical antibiotic therapy, according to such case. Serial dressings were performed weekly and through topical medication based on collagenase, chemical debridement, which made an excellent outcome to local healing possible. Surgical resection was not necessary, since the scar could heal with sole medical management. Although, a surgical intervention in order to obtain better tissue sampling and aiming at correcting scar had been recommended, it was refused by the patient who assumed to feel comfortable regarded that pain, inflammatory and vanishing necrotic tissue all ameliorated.

Concerning topical wound management, vegetable oils are used to treat wounds, mainly in Latin America. These oils have an abundant amount of fatty acids, namely oleic, linoleic, and linolenic. Most studies that address the use of fatty acids and healing have been performed in South America, mainly in Brazil (Baum, 2020). In Brazil, the use of medium-chain triglyceride essential fatty acids (TG-EFA) became popular in 1994, when clinical effects were observed in the prevention of pressure ulcers (Declair, 1994).

Apart from pathophysiology of mastitis, social aspects must be pointed out and nursing care, which had not been focused concomitant to such a bad prognostic mastitis. The subject has undergone fragmentation and as a consequence a breast surgeon turned out to be necessary during management. Relevating biomedical model is crucial in order to comprehend how mastitis may arise from cigarette use. Nevertheless, helping patient reflect upon self-care, and healthcare availability are important questions and should be discussed altogether. In Brazil, management is still centered upon the medical doctor being. In contrast, a nursery consultation within basic level health assistance altogether with social professionals would have prevented such a client from having a breast deformity. Beyond that, access to specialized treatment in this case tre breast surgeon, compound primary assistance. Thus, it is important to emphasize SUS operative functioning, as a failure in primary assistance may lead to problems subject to deserve terciary attention.

#### **4. Conclusion**

There are cigarettes whose quality control is poor, risking smoking breast patients to chronic inflamatory process and deformity. Even arsenium is seldom assumed to be a component of some of low quality control cigarettes. Thus, self care , that is, self-steem should be addressed, beyond the oportunity to be interviewed by a family nurse who would unveil issues surrounding the care of the self and need to consult with a medical doctor or plastic surgeon . Attention should also be addressed to benign breast diseases due to resultant and associated morbidities. Link between benign breast diseases and smoking deserves emphasis and nursing care, since focus on individual self-steem, tobacco use control and use of cigarretes undergoing enough quality control would prevent many patients from suffering body deformities such as it occurs in the present study. Further studies on this field are expected and deserves attention, since humanitarian crisis happens worldwide and besides mastitis and its several causes, other issues such as poverty, educational level, health assistance basic level access must be pointed throughout medical and nursing care.

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