Skin Lesions Occurring in Clients with Reflex Sympathetic Dystrophy Syndrome

Mary Elizabeth Greipp
Audrey Faith Thomas

ABSTRACT: A study was conducted of 198 clients with reflex sympathetic dystrophy syndrome (RSDS) to gather demographic and descriptive data related to the occurrence of skin lesions. Participants ranged in age from 18-78 years, were predominately women and represented all three stages of RSDS. Findings indicated that clients with RSDS develop distinctive skin lesions in addition to the cutaneous changes described in the literature. Skin lesions occur in the first and second stages of the syndrome. Skin lesions reportedly worsened in 135 clients (68%) when their pain became more severe, and correspondingly, seemed to improve as the pain decreased.

Introduction

Reflex sympathetic dystrophy syndrome (RSDS), a poorly understood condition, is a multisystem and multisystem syndrome involving the sympathetic nervous system. It occurs most frequently following minor trauma and its outstanding feature is severe, burning, unrelenting pain. For diagnostic purposes the syndrome has been classified into three stages (Table 1). Consensus on the magnitude of the problem, pathophysiology and effective treatment is lacking.

Skin lesions have been reported in conjunction with RSDS. Typically the first stage of RSDS involves localized edema and warm, red skin that becomes cool, diaphoretic and mottled. These changes are related to cutaneous vasospasmatic activity. In the second stage joints thicken and muscles atrophy. Some clients develop skin lesions which resemble ecchymoses, petechiae, vesicles or ulcerations. More recently, additional skin lesions have been related to RSDS. This article discusses skin lesions reported in a recent survey of persons with RSDS.

Literature Review

Clinicians have only recently begun to recognize that individuals with RSDS develop skin lesions other than the classic ones described in the literature. In a report about seven patients, Webster and colleagues first wrote of the frequent occurrence of inflammatory skin lesions in patients in stages II or III of RSDS. While they could not determine the etiology of the lesions, the similarities led them to believe that there must be a common underlying mechanism. Later they studied an additional nine patients with RSDS and concluded that skin changes were more dramatic than originally thought. They further reported that topical antibiotics and antifungals in addition to oral antibiotics and steroids have not been effective in treating lesions demonstrated in their study sample. Electron microscopy, immunofluorescence and light microscopy identified abnormal findings, but none was consistently found in all study participants.

Most RSDS literature describes skin changes observed during stage I which include rapid hair and nail growth. These skin changes are thought to be a direct result of vasodilation manifest as warm, red and dry skin, moderated by erratic sympathetic activity.

Vasoconstriction, occurring later, causes the skin to become cold, clammy and cyanotic. As circulation diminishes the tissues are poorly nourished causing dystrophic skin changes. Diminished hair growth, cracked and brittle nails and tissue atrophy are observed and attributable to vasoconstriction.

Research Problem

Since so little is known about RSDS and consensus is lacking on the exact pathogenesis of the condition, we have followed almost 1,400 RSDS clients over a period of eight years to observe the course of illness, response to treatment and resultant disabilities. We have been searching for patterns and similarities in clinical data that may contribute to existing knowledge about RSDS. This information could assist clinicians in developing nursing care plans and strategies for this group of individuals.
ed to body areas where the pathophysiology is manifest. Like the underlying disease process, these lesions are not amenable to treatment.

RSDS remains a complex syndrome that plagues clients and practitioners. No universally acceptable and effective treatment is known. The cornerstone of therapy from both the nursing and medical perspectives is pain relief. It is imperative to protect all affected areas from further injury or insult to prevent possible extension or migration of RSDS. Skin lesions have only recently been reported in the literature. Clients must be taught good skin care at all times and to administer all prescribed topical medications and treatments as directed. Most of these individuals still experience marked allodynia and so bed cradles and similar devices should be employed to decrease cutaneous stimulation. Importantly, these individuals can benefit from psychosocial interventions and counseling that will assist them in dealing with chronic pain, disabilities and the uncertainties of the future.

References
Skin Lesions Occurring in Clients with Reflex Sympathetic Dystrophy Syndrome

Introduction

In 1972, Janda and associates reported observations from their clinical observations and pathologic studies of reflex sympathetic dystrophy (RSD). The authors described the characteristic skin changes that occur in patients with RSD, including erythema, edema, and ulceration. These changes are thought to result from sympathetic nerve dysfunction and subsequent vascular and neurogenic changes in the skin. The pathogenesis of RSD is still not fully understood, but it is believed to involve a complex interplay between sympathetic nerve dysfunction, vascular changes, and neurogenic factors.

Materials and Methods

A retrospective analysis of medical records of patients diagnosed with RSD was conducted. The medical records were reviewed for information regarding the clinical presentation, treatment, and outcomes of the patients. The diagnosis of RSD was made based on clinical criteria and was confirmed in some cases by sympathetic nervous system blockade.

Results

The analysis of the medical records revealed that the majority of patients presented with pain, swelling, and skin changes. The skin changes included erythema, edema, ulceration, and hyperpigmentation. The duration of symptoms varied from a few weeks to several years. Treatment of RSD includes a combination of medical and surgical interventions. Medical treatment typically includes analgesics, sympathetic nerve blockade, and rehabilitation. Surgical interventions may include sympathectomy or nerve decompression.

Discussion

The pathogenesis of RSD is still not fully understood, but it is believed to involve a complex interplay between sympathetic nerve dysfunction, vascular changes, and neurogenic factors. The treatment of RSD is challenging, and the outcomes are often unpredictable. Further research is needed to better understand the pathogenesis of RSD and to develop more effective treatment strategies.
There was no consensus on effective treatment reported by these clients and the lesions appeared to present a chronic problem. Our data lack specificity, but we were able to conclude that lesions interfered with activities of daily living and have been a source of pain.

Discussion

Several limitations of this study include the fact that researchers were unable to assess individuals personally and were unable to follow the course of lesion treatment in each participant. Many of the data were retrospective which detracts from accuracy. The questionnaire’s title, “Skin Study Questionnaire”, may have discouraged clients without skin lesions from participating thus accounting for the poor response rate.

Those conducting research in the area of RSDS are faced with multiple dilemmas, some of which are demonstrated in this report. It is very difficult to obtain funding for a condition that has no statistical data to document its incidence and has just received an ICD-9 code. And so, researchers are severely limited in resources needed to conduct thorough investigation. These authors were unable to travel around the country to examine study participants. Services of dermatologists to assist in the precise diagnosis of the lesions were not available. Double-blind studies using experimental and control groups are not possible given the nature of the disease and available data collection methods. The other notable dilemma faced by RSDS researchers is the need to deal with retrospective data. By the time most RSDS clients are diagnosed and recruited into studies they have had the condition for a considerable time and have been experiencing the hallmark of the condition, severe, unrelenting pain.

Even these multiple limitations cannot devalue the importance of this and other study findings. This study presents empirical clinical findings from a large sample of participants. They are new findings and they should be studied further. More longitudinal studies are needed to follow clients with RSDS to capture data about their remissions and exacerbations and to assist in finding population subgroups such as those with unusual skin lesions. Indeed, these may be indicative of variants of the RSDS pathophysiologic process which to date remains unclear and controversial.

While there does not appear to be one characteristic lesion found in RSDS, the authors have observed similar types of lesions in many RSDS clients over a period of eight years. Findings from this survey are in agreement with Webster et al, who suggest the possibility of a common underlying mechanism, and also that such a mechanism is much more complex than originally thought.5

Summary

A large number of individuals diagnosed with RSDS demonstrated skin lesions in the affected areas other than the usual erythema and cyanosis expected in stages one and two of the disease process. More distinctive lesions found in study participants demonstrated wide variability that may be similar to that seen in other pathophysiological conditions.

These study findings indicate that the more unusual lesions seem to occur initially between one and two years after onset of RSDS and are restrict-
Skin lesions have been observed in many RSDS clients over a period of years. These lesions are different from, and in addition to the classic edema, erythema, hyperthermia and atrophy documented in the literature. We collected further information about these lesions in our study sample.

Methodology

In this survey, demographic and descriptive data relative to the occurrence of skin lesions were gathered. During the spring of 1993, a two page questionnaire was sent to 1,326 registered members of the RSDS Association. Specific information about the occurrence of skin lesions and their treatment was requested. We also asked clients to submit pictures of their lesions if available.

In order to be registered a client must be diagnosed by a physician, complete a 16 page application and apply for association membership. The client provides names and addresses of physicians, and permission to contact physicians for verification and further medical information. The lengthy application asks detailed information about the client’s family history, past and present medical histories and social history. This application was pilot tested eight years ago and minor modifications were made at that time. The application also contains a statement informing the participant that all information sent to the RSDS Association will be made available to researchers and that statistical data will be available to interested professionals and the general public. Any identifying demographic data are limited to association researchers. Participants are guaranteed confidentiality in published manuscripts and professional presentations. Periodic update questionnaires have been sent out over the years.

Findings

Completed questionnaires were returned by 198 persons for a 15% response rate. Participants ranged in age from 18-78 years of age with a mean of 41 years. Of the 198 respondents, 167 (84%) were women and 31 (15%) were men. All three stages of RSDS were equally represented. The mean length of time participants reported having RSDS was 4.7 years and from the onset of RSDS until the appearance of skin lesions was 54 weeks. Most clients reported having had RSDS for a considerable period of time before lesions appeared, while a small number reported having had RSDS for only a brief time before the appearance of the lesions.

Table 2 illustrates the major characteristics of skin lesions reported by the 198 respondents. Many reported more than one characteristic. When asked if these manifestations were constant or intermittent, 34% reported they were constant and 64% intermittent.

Of the study respondents 83% reported the
lesions evoked a burning sensation, while 65% reported that the lesions itched. Both burning and itching were reported by 58% of participants. Worsening of skin lesions when the pain became more severe, and improvement as the pain decreased was reported by 10% of the participants.

About 20 participants sent pictures of their unusual skin lesions. We selected several pictures to demonstrate the variability in the appearance of the lesions (Figs 1-5). Some lesions appear more like a generalized rash, while others appeared to be small but multiple eruptions and others were crater-like ulcerations.

Figure 1 demonstrates a marked erythema over areas of the body affected by RSDS, the anterior cervical, upper thoracic and epigastic regions. This client has had RSDS for three years and stated the rash began approximately two years into the disease process. The client noted that the lesions burned, itched and worsened as pain increased.

Figure 2 demonstrates a skin lesion that resembles numerous pustules, somewhat shiny in appearance, that have coalesced into a large mass on the anterior aspect of the client’s left forearm. These lesions were found on all four extremities affected by RSDS. This client also reported burning and itching of the lesions which worsened with the pain. The client had RSDS for three years. Lesions were noted one year ago.

Figures 3A and B demonstrate lesions restricted to areas affected by RSDS. The client’s anterior and posterior right lower extremity photos illustrate generalized redness in addition to red pustule-like eruptions. The lesion is circumferential and parts of the posterior lesion (B) resemble strawberry hemangiomas. This client reported burning, itching and worsening of the lesions with increased pain. While this client has had RSDS for ten years, these lesions occurred approximately 2-2.5 years into the disease process. Note the apparent swelling in the right leg and foot.

Figures 4A and B show foot and back lesions in a client who has had RSDS for over ten years. Foot lesions (A) occurred within months of RSDS onset. The foot appeared dark red to cyanotic with crusty ulcerative lesions. Back lesions (b) developed following injury to her back. Skin in this area is described as scaly and like alligator hide. Lesion appearance did not correlate with RSDS pain levels.

Figure 5 shows left leg of a client who has had RSDS for over six years. The leg is noticeably swollen and crusty with a 2.5 cm ulcer of recent origin on the lateral aspect. Note the difference in appearance of the skin adjacent to the ulcer from that below the ulcer where swelling and beginning lichenification can be seen.