

## Clinical note

# Amputation and reflex sympathetic dystrophy

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### Abstract

Reflex sympathetic dystrophy is a chronic pain syndrome characterized by chronic burning pain, restricted range of motion, oedema and vasolability. Patients are difficult to treat and the prognosis is very often poor. This report emphasizes that an amputation in case of a reflex sympathetic dystrophy is mostly due to a too late recognition of this syndrome. In the international literature little is written about an amputation as a therapy for reflex sympathetic dystrophy. It is only mentioned as a therapy in the end stages of this syndrome. Sometimes a rejected amputation, as in this case report, can have a relatively good result. An early recognition of this pain syndrome produces the best possible outcome.

### Introduction

Reflex sympathetic dystrophy (RSD) is a pain syndrome in which the pain is accompanied by loss of function and evidence of autonomic dysfunction (Amadio *et al.*, 1991). There are many definitions in the literature and many names are used, such as Sudeck atrophy, neurovascular atrophy, painful osteoporosis and algodystrophy (Ascherl and Blumel, 1981). Mostly pain (burning) in an extremity, oedema, restrained range of motion, hyperaemia, hyperaesthesia, alterations in sweating and skin alterations are mentioned in the definition (Amadio *et al.*, 1991; Geertzen *et al.*, 1994; Poplawski *et al.*, 1983). The etiopathogenesis remains uncertain. The initial cause may be a traumatic or surgical injury of the peripheral

nerves but can also be a fracture or another trauma in the peripheral tissues. Sometimes vascular or cardiac disorders or diseases of the central nervous system can be the provoking cause.

All kinds of therapy are used with different results. Physical therapy, occupational therapy, regional intravenous blocks with guanethidine or brethyllium (Hannington-Kiff, 1974), stellate ganglion blocks, oxygen free radical scavengers (Goris *et al.*, 1987; Veldman *et al.*, 1993), corticosteroids and psychotherapy (Lynch, 1992). Sometimes in an end-stage reflex sympathetic dystrophy amputation is suggested. Few papers concerning this problem have been published (Erdmann and Wynn-Jones, 1992; Eyres *et al.*, 1990; Rohrich *et al.*, 1987; Szeinberg-Arazi *et al.*, 1993). Most articles concern case reports and are of a descriptive nature. Erdmann and Wynn-Jones (1992) describe two patients who were amputated (both trans-humeral amputations) two and three years after recognition of the RSD and one was successfully fitted with a prosthesis. Eyres *et al.* (1990) describe only one patient whose leg (trans-fermoral) was amputated after a RSD. The preoperative pain was abolished; nothing is said about the functional outcome. In the Rohrich *et al.* (1987) study one patient is mentioned who underwent a distal trans-radial amputation 21 years after the RSD syndrome. Nothing is said about the functional outcome. Szeinberg-Arazi *et al.* (1993) reported on 12 patients with RSD of which 10 underwent an amputation of the affected limb (7 lower limb amputations). None of the patients who had undergone upper-limb amputations used their prostheses. Of the 7 lower limb amputation patients 6 used their prostheses frequently. All patients required a prolonged support structure to aid them in coping.

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There are doubts about an amputation as a treatment in the end-stage of the RSD syndrome especially in the light of new publications concerning the influence of psychosocial aspects in this syndrome (Geertzen, *et al.*, 1994; Van Houdenhove *et al.*, 1992). A very unusual case of reflex sympathetic dystrophy is presented following a lateral epicondylitis.

### Case report

A 28-year-old man presenting in the department of surgery had pain from his left elbow during several months. The patient was right-handed. The medical history revealed 13 different operations, an additional 5 admissions to a general hospital for different complaints and one admission into a psychiatric hospital. A psychologist recently advised not to operate on this patient (only when life was at stake) because of the high risk for recurrences. A lateral epicondylitis (a "tennis" elbow) was diagnosed on the basis of the history of pain and the acute tenderness at the origin of the extensor muscles of the forearm. The patient had to carry heavy weights every day for his occupation (garbage collector). Therapy was advised and the patient received at first two injections with steroid followed by a few weeks of rest. After this rest period without result his arm was immobilized in plaster of Paris. This treatment also was without result. Then he was operated by a general surgeon; the extensor origin was stripped from its attachment on the lateral epicondyle (Homan procedure). The pain disappeared but the elbow became unstable. After consulting several specialists, he was again operated (6 months later). A reconstruction of his lateral ligaments was

performed followed by 6 weeks of immobilisation in plaster of Paris. Hereafter persistent pain followed. The diagnosis of RSD was proposed and confirmed. The following symptoms were seen: atrophy of the muscles and skin, discolouration of the skin, hyperhidrosis, restricted range of motion, dysaesthesia and osteoporotic changes on the X-rays. Rehabilitation followed and the patient received a combination of physiotherapy, occupational therapy, orthotic management and medication (analgetics). He refused guanethidine blocks. A psychiatrist was consulted and asked to see the patient. The conclusion was that there were signs of conversion and neuroticism. No treatment was proposed. In the meantime the arm became afunctional (Fig. 1). An electromyographic study confirmed that there was neurogenic lesion. Five years after the Homan procedure the patient asked for an amputation through his upper arm because of the pain. The orthopaedic surgeon agreed because of the existence of multiple small wounds on the afunctional left hand and arm. In the meantime he was fitted with an orthosis for protection (Fig. 2). The psychiatrist and rehabilitation specialist opposed amputation because of his psychiatric history and for fear of the so-called "salami-technique".

Six months later the amputation was performed through his left upper arm. His post-operative recovery was uneventful. Now, two years after his amputation, the patient is very satisfied and only occasionally has pain in his stump. There is no phantom pain; fitting a prosthesis was not successful mainly because the patient refused to wear it.

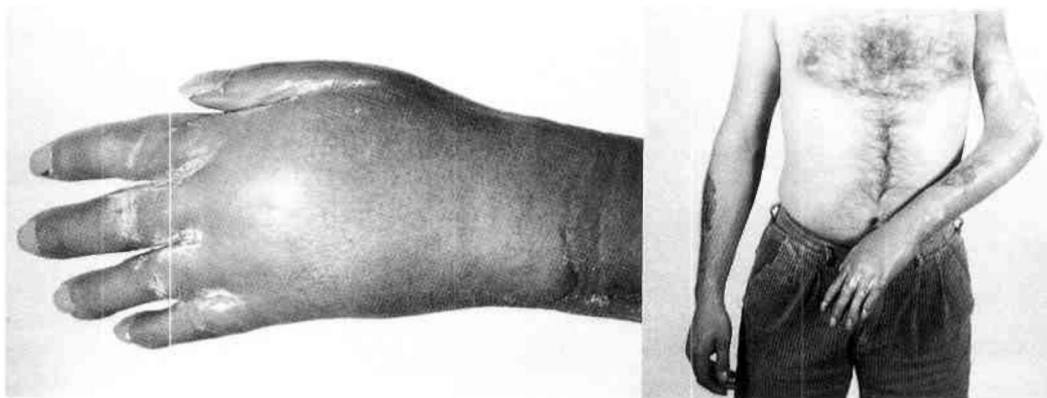


Figure 1. The patient with afunctional arm.



Figure 2. The protective orthosis.

### Discussion

RSD occurs in 5-7% of all traumas (Hardy and Meritt, 1988). This syndrome is characterized by chronic (burning) pain, restricted range of motion, oedema and vasolability. There are many described therapies with reported results. All treatments are based on elimination of the etiological factors.

In the case reported here all signs of a RSD were present. However this patient showed an extensive medical and psychiatric history. An earlier psychiatric consultation and treatment might have averted this amputation. In the Department of Rehabilitation many patients with an RSD are seen but this is the only one who resulted in amputation. There is much discussion about whether to amputate in the end stage of an RSD syndrome or not. Despite the relatively good result reported here, the patient stopped complaining and is mainly painfree, however, it is stressed that an amputation in case of an RSD must be withheld if possible. Because the psychological patterns become stronger in the duration of the RSD syndrome a recurrence of a new pain (RSD) syndrome may arise after an amputation. There is sparse literature on this subject, so in each case one has to weigh the advantages and disadvantages for the patient. Nowadays the therapy provided consists of giving free radical scavengers (Goris

*et al.*, 1987), occupational therapy, physiotherapy and if necessary psychotherapy (stress management).

The authors believe that the early diagnosis of the RSD gives the best functional outcome for the patient.

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