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# The value of nerve blocks in the diagnoses and treatment of complex regional pain syndrome type 1: A series of 14 cases

*Intérêt des blocs nerveux périphériques dans le diagnostic et le traitement du syndrome douloureux régional complexe de type I : à propos de 14 cas*

C. Muhl<sup>a,\*</sup>, M.-E. Isner-Horobeti<sup>a</sup>, F.-Z. Laalou<sup>b</sup>, P. Vautravers<sup>a</sup>, J. Lecocq<sup>a</sup>

<sup>a</sup> Institut universitaire de réadaptation Clémenceau, 45, boulevard Clémenceau, 67082 Strasbourg, France

<sup>b</sup> Service d'anesthésie réanimation, centre de chirurgie orthopédique et de la main, CHU de Strasbourg, 10, avenue Achille Baumann, 67400 Illkirch-Graffenstaden, France

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## Abstract

**Objectives.** – Complex regional pain syndrome type 1 (CRPS-1) can progress to joint stiffness, which may be related to pain and/or capsule-ligament contracture. In this context, it is difficult to distinguish the respective causative roles of pain and contractures. Nerve blocks (NBs) can be used to determine the aetiology of joint stiffness. Subsequent treatment will depend on whether contractures are present or not. The objective of the present study was to evaluate the diagnostic and therapeutic value of the nerve blocks in the management of joint stiffness caused by CRPS-1.

**Design of the study.** – A retrospective case series.

**Methods.** – Implementation of NBs in subjects with joint stiffness caused by CRPS-1. Primary efficacy criterion: an increase in the range of joint movement. Secondary criteria: pain level, treatment decision, duration of therapeutic NBs, return to work.

**Results.** – Fourteen patients with joint stiffness underwent 17 NBs. Ten NBs (59%) were associated with the normalization of the range of joint movement (i.e. the absence of contractures and the presence of an isolated pain component), prompting the implementation of physical therapy during NBs (“therapeutic NBs”) in 90% of these cases. Three NBs (18%) were associated with a partial increase in the range of joint movement (i.e. a background of joint stiffness due to a combination of pain and contracture), prompting the implementation of a therapeutic NB in all of these cases. Four NBs (23%) were not associated with any increase in the range of joint movement (i.e. pure contractures), prompting consultation with a surgeon in all of these cases. Forty-three percent of the patients have since returned to work.

**Conclusions.** – Nerve block is a valuable diagnostic and therapeutic option in the management of joint stiffness caused by CRPS-1.

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**Keywords:** Complex regional pain syndrome; Joint stiffness; Nerve blocks; Physical therapy

## Résumé

**Objectifs.** – Le syndrome douloureux régional complexe de type I (SDRC I) est responsable de douleurs et peut évoluer vers une raideur articulaire. Cette raideur peut être d'origine algique ou liée à des rétractions capsulo-ligamentaires. Il est difficile de faire la part entre douleurs et rétractions. Les blocs nerveux périphériques (BNP) peuvent préciser l'étiologie de la raideur. Selon l'existence ou non de rétractions, la prise en charge sera différente. Notre objectif est d'évaluer l'intérêt diagnostique et thérapeutique des BNP dans la prise en charge de raideurs articulaires liées au SDRC I.

**Design de l'étude.** – Étude rétrospective, série de cas.

**Méthodes.** – Réalisation de BNP chez des sujets présentant une raideur articulaire liée à un SDRC I. Critère de jugement principal : progression des amplitudes articulaires. Critères secondaires : douleur, décision thérapeutique, durée du BNP, reprise professionnelle.

**Résultats.** – Quatorze patients avec raideur articulaire ont bénéficié de 17 BNP : 10 BNP (59 %) ont montré une normalisation des amplitudes articulaires (absence de rétraction, composante douloureuse pure), aboutissant pour 90 % d'entre eux à une kinésithérapie sous bloc

\* Corresponding author. Institut universitaire de réadaptation Clémenceau, 45, boulevard Clémenceau, 67082 Strasbourg, France.

E-mail address: [caroline.muhl@chru-strasbourg.fr](mailto:caroline.muhl@chru-strasbourg.fr) (C. Muhl).

(BNP thérapeutique). Trois BNP (18 %) ont montré une amélioration partielle des amplitudes articulaires (association douleur + rétractions), conduisant tous à un BNP thérapeutique. Quatre BNP (23 %) ont montré une absence d'amélioration des amplitudes articulaires (rétractions pures), aboutissant tous à un avis chirurgical. Quarante-trois pour cent des patients ont repris une activité professionnelle.

**Conclusions.** – Les BNP représentent une alternative diagnostique et thérapeutique dans la prise en charge de raideurs articulaires liées au SDRC I.

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**Mots clés :** Algoneurodystrophie ; Raideur articulaire ; Blocs nerveux périphériques ; Kinésithérapie

## 1. English version

### 1.1. Introduction

Complex regional pain syndrome type I (CRPS-1) is associated with pain and vasomotor and trophic phenomena. In the mid-term, joint stiffness can appear; this may be caused by pain alone or by true capsule and ligament contractures and/or muscle and tendon contractures. It is sometimes difficult to distinguish between the respective causative roles of pain and contractures. The treatment of CRPS-1 is often challenging, with a large number of poorly codified therapeutic approaches. In the literature, only oral and intravenous bisphosphonates have proven efficacy [1–3]. The levels of evidence for calcitonin, corticosteroids, gabapentin, vasodilators, sympathetic drugs and stellate or lumbar sympathetic ganglion blocks are not high enough for their recommendation in the treatment of CRPS-1. The same is true for physical therapy and occupational therapy [4].

The use of nerve blocks (NBs) in the management of joint stiffness due to CRPS-1 has not been extensively documented. However, NBs may have value in both diagnosis (by distinguishing between the respective roles of pain and capsule/ligament contracture in joint stiffness) and therapy (by providing pain relief and thus enabling physical therapy during the block). Literature data on this subject are scarce and relate only to case reports [5–8].

The objective of the present study was thus to assess the diagnostic and therapeutic value of NBs in patients presenting joint stiffness in a context of CRPS-1.

### 1.2. Methods

This was a descriptive, retrospective case series in patients presenting joint stiffness caused by CRPS-1 and having undergone NBs in the Physical and Rehabilitation Medicine (PRM) Department at Strasbourg University Hospital (Strasbourg, France) between January 2004 and January 2011.

#### 1.2.1. Characteristics of the study population

We collected:

- clinical, sociodemographic and psychological data on the population;
- data related to CRPS-1 and joint stiffness;
- data on the NB itself.

*1.2.1.1. Clinical data.* All the patients had a diagnosis of CRPS-1 with stiffness affecting one or more limb joints.

The diagnosis of CRPS-1 was based on clinical criteria (disease history, neuropathic pain, vasomotor and/or trophic disorders, etc.) and (in some cases) confirmation by bone scintigraphy.

Joint stiffness was measured with conventional goniometry or by noting abnormal postures.

The exclusion criteria were as follows:

- allergy to the local anaesthetics lidocaine or ropivacaine;
- spontaneous or induced coagulation disorders;
- any concomitant, progressive systemic disorder;
- skin infection at the puncture point;
- lack of cooperation.

After receiving comprehensive information on the study's objectives and procedures, the patients gave their written, informed consent to participation.

*1.2.1.2. Sociodemographic and psychological data.* The following types of sociodemographic data were collected: the number of patients, gender, age, and socioprofessional context (i.e. occurrence of a workplace accident or an occupational disease).

Psychological data were taken from a psychiatric consultation arranged for the patient when the PRM physician suspected the presence of psychological disorders.

*1.2.1.3. Data related to CRPS-1 and the joint stiffness.* The data related to CRPS-1 and joint stiffness were as follows:

- the aetiology of CRPS-1;
- the time since onset of CRPS-1;
- the site(s) of the joint stiffness related to CRPS-1;
- treatment(s) prior to the NB.

*1.2.1.4. Data related to the NB.* We recorded the topography of each NB (i.e. the anaesthetized nerves and the approach used).

#### 1.2.2. Procedure

The NB was performed under optimal safety conditions at Strasbourg University Hospital by an anesthetist with expertise in local/regional anesthesia. The procedure took place in a surgical recovery room, with intensive care facilities nearby.

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