Role of Autonomic Nervous System in pain

An Essay
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بسم الله الرحمن الرحيم

قالوا سبحانك لا علم لنا

الاما علمتنا انك انت

العليم الحكيم

صدق الله العظيم

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Dedication

This work is dedicated to my great mother, which always told me don’t look for the beauty or smoothness of the skin but look for the heart that loyal within. The beauty may fade, the skin become old but the heart that loyal within never come cold

Thank you for every thing.

Hisham elsaid

Abstract

Neuropathic pain is a sequela of dysfunction, injuries, or diseases of the peripheral and/or central nervous system pain pathways, which has historically been extremely difficult to treat. Complex regional pain syndrome (CRPS) types 1 and 2 are neuropathic pain conditions that have a long history in the medical literature but whose pathophysiology remains elusive and whose available treatment options remain few. Bisphosphonates have been used for pathologic conditions associated with abnormal bone metabolism, such as osteoporosis, Paget's disease and cancer-related bone pain for many years. More recently, results of clinical trials have indicated the potential role of bisphosphonates in the treatment of CRPS/RSD. In this paper we will review the preclinical studies regarding the use of bisphosphonates as analgesics in animal models of neuropathic pain, and also summarize the clinical trials that have been done to date. We will give an overview of bisphosphonate pharmacology and discuss several potential mechanisms by which bisphosphonates may be analgesic in CRPS/RSD and bone pain of noncancer origin.

Key words:

Neuropathic pain.

Central nervous system.

Complex regional pain syndrome.

List of abbreviation

ANS	Autonomic nervous system
Ach	Acetyl choline
AEDs	Antiepileptic drugs
ATP	Adinotriphostase
CNS	Central nervous system
CRPS	Complex regional pain syndrome
DEF	Diisoproyleflurophosphate
DSP	Distal symmetric polyneropathy
FDA	Food and drug administration
ICU	Intensive care unit
IML	Intermediolateral gray column
ISAP	International assocaiation for the study of pain
NE	Norepinephrine
NMDA	N-methyl D Aspartate
PAG	Periaqueductal grey matter
PNS	Peipheral nervous system
QSART	Qualitative sudmotor axon reflex test
RSD	Reflex sympathetic dystrophy
SIP	Sypmapthically indepent pain
SMP	Sypmapthically mediated pain
SNRI	Serotonin noradrealine reuptake inhibitor

TCA	Tricyclic antidepressants
TENS	Transcutaneous electrical nerve stimulation
VIP	Vasoactive intestinal polypeptide
VMM	Ventromedian medulla
WDR	Wide dynamic range

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Introduction &aim of the work

Chapter 1

Introduction

The Autonomic Nervous System (ANS), especially sympathetic afferents and efferents, is frequently involved in various painful states; this is one of the most important portions of the nervous system to the physician involved in managing patients with acute and chronic pain. To properly manage the pain of angina pectoris, complex regional pain syndromes types I and II, pancreatitis, various peripheral vascular diseases, and other conditions, it is essential for the clinician to have thorough knowledge of the anatomy, physiology, and pharmacology of this system. For the anesthesiologist or other physician using nerve block therapy, it is also essential to have thorough knowledge and experience in techniques of blocking various portions of this system.[1]

ANS is composed of central and peripheral portions. The central portion consists of centers located in the cortex, hypothalamus, midbrain, and medulla and pathways located in the brainstem and spinal cord. The peripheral portion consists of afferent and efferent neurons, the axons of which are located outside of the central nervous system.

Autonomic nervous system is enrolled in different pain syndromes, the term sympathetically maintained pain (SMP) is commonly used by clinicians to describe patients who have Complex Regional Pain Syndrome (CRPS). However, all too frequently the term is used incorrectly. SMP is defined as “pain

that is maintained by sympathetic efferent innervation or by circulating catecholamines". Thus, SMP is not a clinical diagnosis, but rather an assumed pain mechanism. The term SMP should only be used in clinical practice to describe a patient's report of pain relief after a sympatholytic procedure (i.e., if a patient reports good pain relief after a sympathetic block, then that patient can be said to have SMP.[2]

It has become common practice in the world of pain medicine to temporarily block or destroy parts of the Sympathetic nervous system. However, the basis for this practice is obscure and uncertain. Few, if any, placebo controlled trials have established the efficacy of sympathetic neurolysis in the many conditions treated by this technique. Despite this, sympathetic neurolysis is often advocated as the first line of treatment in some pain states, facial blushing, and Raynaud's disease.[3]

The Aim of Work:

ANS may be affected by pain pathogenesis also ANS can be enrolled in different pain syndromes. The aim of work is to clarify the different pain syndrome in which the ANS may play a role in their pathogenesis

Further more to focus in different blockades and its beneficial effect in pain management.

Autonomic Nervous System