The Pharmacological Treatment of Ischemic Stroke goes beyond tPA: Edaravone, an Already Commercialized Promise.

Ischemic stroke is the third leading cause of death in industrialized countries and the most frequent cause of permanent disability in adult worldwide. As expected, disability involves tremendous personal and financial costs to the individual, the family and the health care system.

Objectives
- Make an overview of the main pharmacological treatments for ischemic stroke.
- Provide a general view of the main therapies that are in process of investigation, giving special attention to those that are likely to hit the market in the near future.
- To focus on edaravone, the only free radical scavenger that has provided clinical evidence for therapeutic effects on ischemic stroke.

Introduction

Types of stroke
- Blood clot stops the flow of blood to an area of the brain
- Hemorrhagic stroke

Core and penumbra
- Ischemic stroke
- Hemorrhagic stroke

Conventional treatments
- Thrombolytic agents: rtPA
- Anticoagulants: Heparin, Aspirin

Core
- Non salvageable tissue

Penumbra
- Hyperperfused tissue surrounding the core likely to be salvaged.

Methodology

Source:
Data obtained from papers and reviews researched on PubMed database and specialized literature.

Criteria of selection
- Use of key words such as: ischemic stroke, penumbra, edaravone, pharmacological treatment.
- Year of publication
- Journal impact factor

Patophysiolo and therapeutic targets

EDARAVONE
- Able to cross the blood brain barrier
- Reducing inflammatory response
- Protecting ischemic neurons from apoptosis
- Inhibiting matrix metalloproteinase-9

Mecanism of action
- Edaravone belongs to phenol compounds
- Lipophilic:
- Low molecular weight

EDARAVONE
- Source: http://neurowiki2013.wikidot.com/individual:alzheimers
- Date accessed: 2015-04-11

Synergy of combined tPA – Edaravone therapy

Safety and tolerability
- When administered twice a day in quantities of 30 mg...
- LOW rate of side effects
- Some complications can be observed

Efficacy
- Under clinical investigation
- When administered within 72 hours...
- Reduces infarct volume
- Most improvements in clinical function

Pharmacokinetics
- Plasma edaravone concentration seems to disappear without accumulation
- Binding rate to serum albumine: 89 – 93%
- Metabolites: Sulphate complex, Glutamic acid complex

Beyond the antioxidant effects...