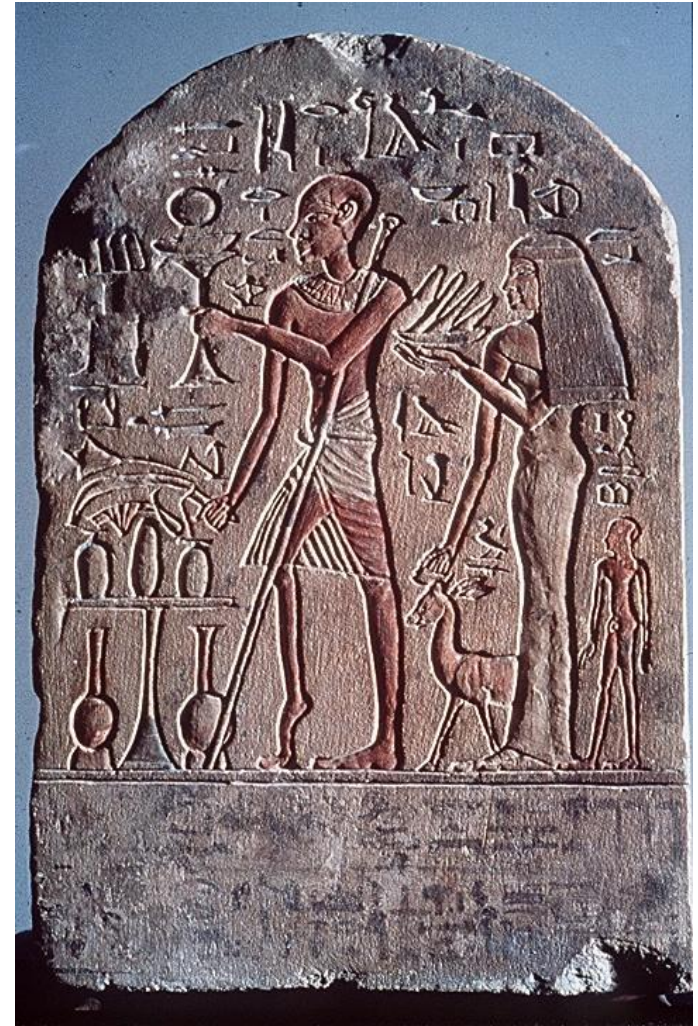


Post-polio syndrome – pharmacological treatment

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Pharmacotherapeutic strategies in PPS

- **Aetiologic treatment**
 - **Symptomatic treatment**
-

Pharmacotherapeutic strategies in PPS

- **Avoid negative side-effects of pharmacological treatment**

Post-polio syndrome – most common symptoms

- Increase of weakness or new muscle weakness
 - Fatigue
 - Pain
-

Pathophysiology

- **Overstress of remaining motor units.**
 - **Overuse of remaining motor units.**
 - **Age.**
 - **Amyotrophic lateral sclerosis (ALS).**
 - **Persistent polio virus infection.**
 - **Immunological factors.**
-

Post-polio syndrome – most common symptoms

- **Increase of weakness or new muscle weakness**

Pyridostigmine

Q-10

- **Fatigue**

Pyridostigmine

Amantadine

Q-10

Modafinil

Lamotrigine

- **Pain**

Painkillers

Pyridostigmine

- **Increases (stabilizes) the activity at the neuromuscular junction**
 - **No effect - Trojan et al 1999**
 - **Slight effect on walking distance – Horemans et al 2003**
-

Amantadine

- **Used in MS fatigue**
 - **No effect – Stein et al 1995**
-

Q-10

- **Co-enzyme Q 10, ubiquinone, enhances energy production in the cell.**
 - **Increased energy metabolism – Mizuno et al 1997**
 - **No effect – Skough et al 2008**
-

Modafinil

- **Increases central nervous system activity**
 - **No effect on fatigue – Chan et al 2006**
 - **No effect on fatigue – Vasconcelos et al 2007**
-

Lamotrigine

- **Sodium channel blocker – antiepileptic drug**
 - **Positive effect on fatigue, pain and quality of life –
On et al 2005.**
-

Negative side-effects of drugs

- **Pain killers**
 - **Statins**
-

Painkillers

- **Symptomatic treatment, avoid muscle relaxants and opioids**
 - **10% of pain is neuropathic due to dischernia and compression neuropathies – good effect of membrane stabilizing drugs**
-

Post-polio syndrome, spinal cord injury and statin myopathy: double trouble or incorrect diagnosis? Two case reports.

Werhagen L, Borg K. J Rehabil Med. 2011 Jul;43(8):734-735.

Pathophysiology

➤ Persistent polio virus infection

Antiviral drugs

➤ Immunological factors

Immune-modulatory drugs

Immune-modulatory drugs used in PPS

- **Cortison**
 - **Interferon**
 - **Immunosuppressants**
 - **Immunotherapy**
 - **Immune-globulins (IVIg)**
-



Journal of the Neurological Sciences 205 (2002) 9–13



Journal of the
**Neurological
Sciences**

www.elsevier.com/locate/jns

Prior poliomyelitis-evidence of cytokine production in the central nervous system

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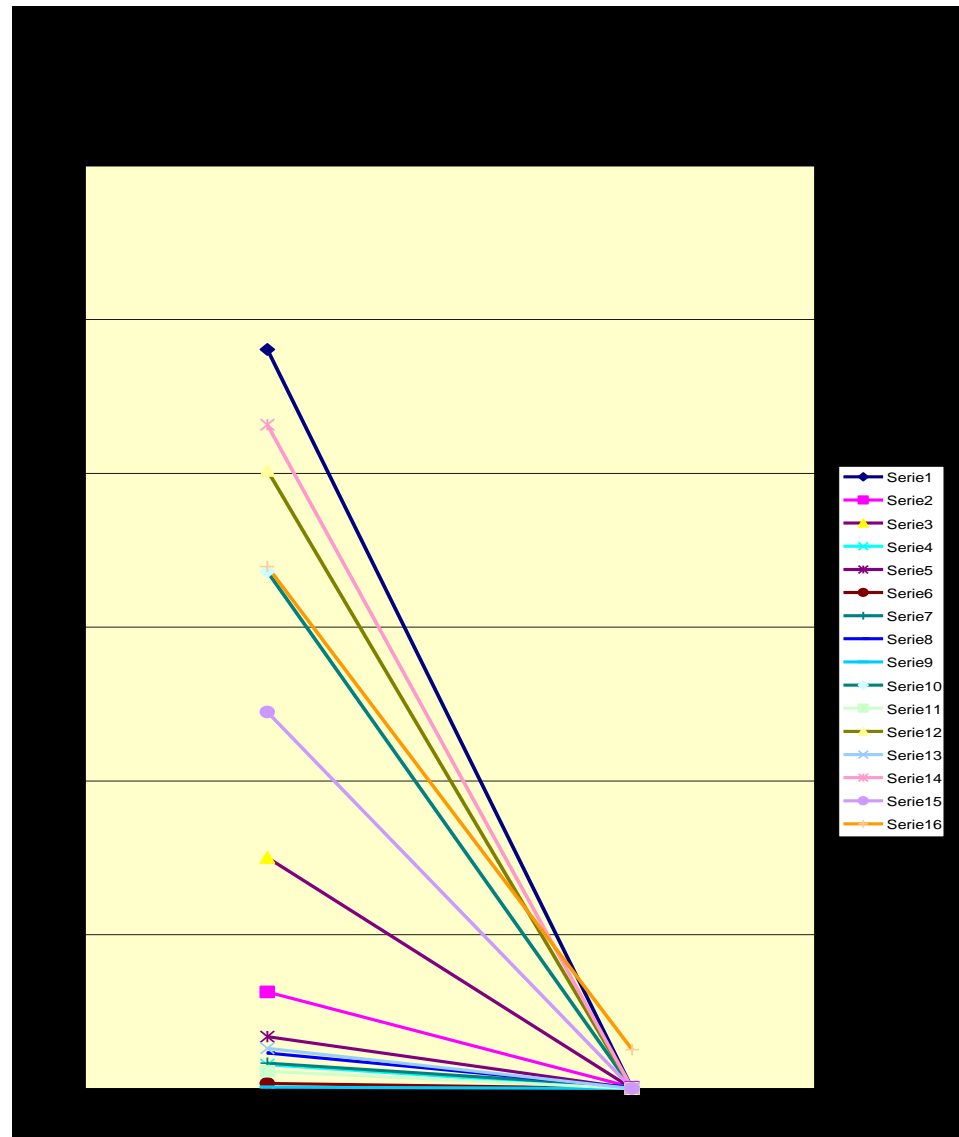
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Received 25 October 2001; received in revised form 29 January 2002; accepted 9 April 2002

INF-gamma

$P=0.00003$



0,00



Intravenous immunoglobulin for post-polio syndrome: a randomised controlled trial



Henrik Gonzalez, Katharina Stibrant Sunnerhagen, Inger Sjöberg, Georgios Kaponides, Tomas Olsson, Kristian Borg

Summary

Background Survivors of poliomyelitis often develop increased or new symptoms decades after the acute infection, known as post-polio syndrome. Production of proinflammatory cytokines within the CNS indicates an underlying inflammatory process, accessible for immunomodulatory treatment. We did a multicentre, randomised, double-blind, placebo-controlled study of intravenous immunoglobulin in post-polio syndrome.

Lancet Neurol 2006; 5: 493-500

Published Online

April 25, 2006

DOI:10.1016/S1474-4422(06)

70447-1

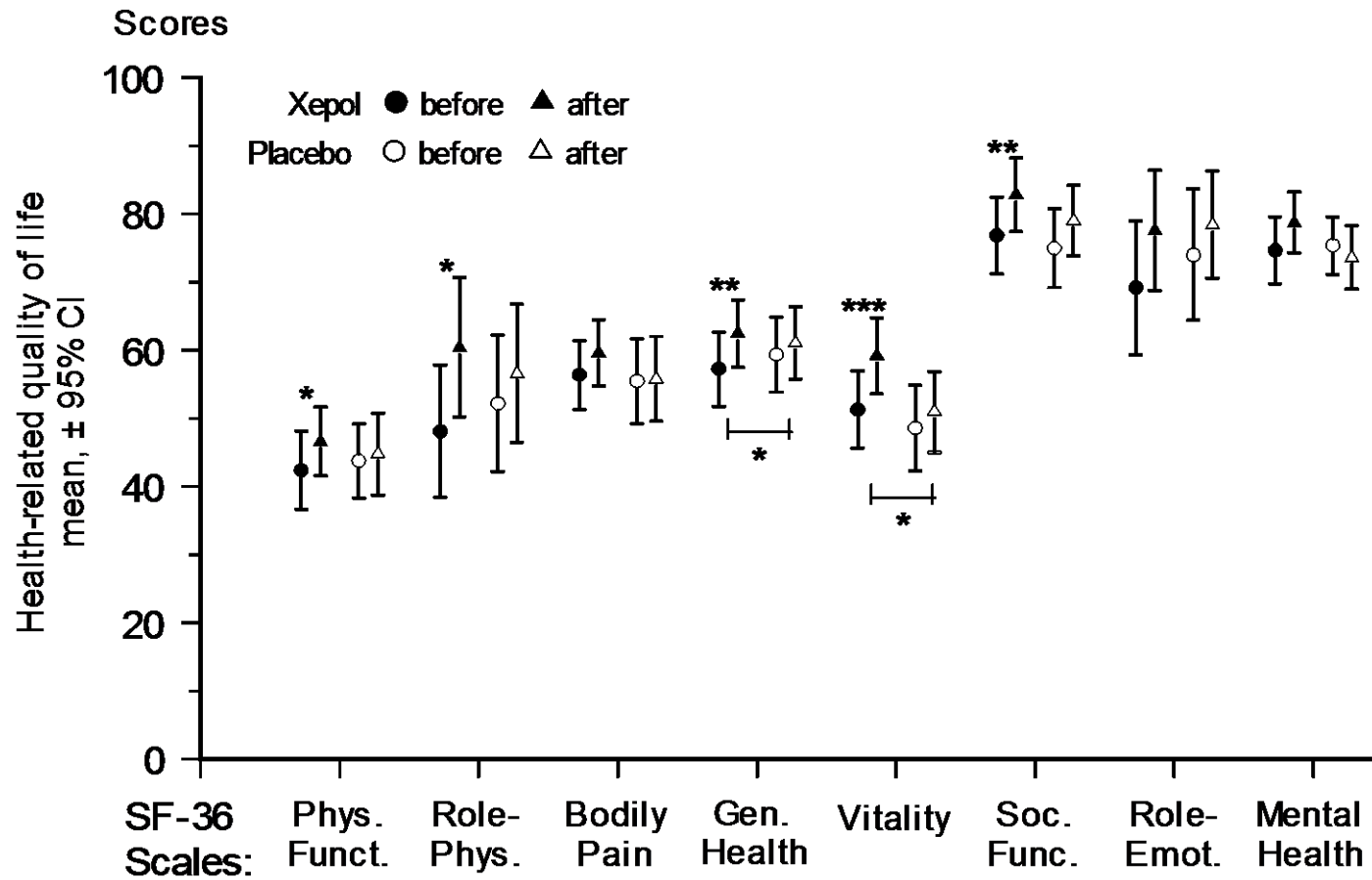
**Multicenter, placebo-controlled, double-blinded study
including 142 post-polio patients**

Increase of muscle strength

Treated **+ 4.3%**

P < 0.05

Placebo **- 5.7%**



One year follow-up study

Gonzalez et al 2011
subm for publ

- **Still significant decrease of cytokines**
 - **Still significantly better quality of life for physical domains**
-

2.5 year follow-up study Gonzalez et al 2011 in preparation

- **Cytokine levels ?**
 - **Clinical parameters back to base-line**
-

Other studies

- **Farbu et al 2007.**
TNF-alfa increase, effect on pain after 3 months.
 - **Fordyce et al 2008**
TNF-alfa increase correlated to pain, no intervention
 - **Bertolasi et al 2010**
RCT 50 patients – effect on quality of life - fatigue
-

Werhagen and Borg 2011

In press, J Rehabil Med

- **64 PPS patient treated**
 - **90 gram IVIG**
-

Werhagen and Borg 2011

- **Significant effect of IVIG**
 - **2/3 of patients had a decrease of pain (more than 10 units on VAS-scale)**
-

Östlund et al 2011

In manuscript

- 160 patients
 - 90 g IVIG
 - Open study
 - Evaluation after 6 and 12 month
-

Östlund et al 2011 In manuscript

- **Statistically significant effect on Quality-of-life (SF- 36) at 6 month**
 - **Low vitality - effect**
 - **High vitality - no effect**
-

Östlund et al 2011

In manuscript

- **Responders**
 - **Non-responders**
 - **Negative responders**
-

Summary

- **The main treatment of post-polio syndrome is not pharmacological**
 - **Pharmacological treatment in post-polio is symptomatic**
 - **Lamotrigine and IVIG have given promising results regarding different effects in post-polio syndrome**
 - **IVIG have had effect on muscle strength, pain and quality of life**
 - **Pharmacological agents depressing muscle and pulmonary function should be avoided**
 - **Inform the anaesthetist before operation**
-

GRIFOLS

PHARMALINK

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