

Pentoxifylline significantly reduces radicular pain secondary to lumbar disc hernia

A PROSPECTIVE, RANDOMIZED CROSSOVER, SINGLE-BLIND CONTROLLED STUDY

LABORATORY OF RESEARCH IN NEUROSCIENCES-FM-USJ & HOTEL-DIEU DE FRANCE

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Introduction

Low back pain

- Represents the third-leading cause of disability in people older than 45 years ⁽¹⁾
- Accompanied by radiculopathy in 12% of cases ⁽²⁾

Treatment is conservative in most cases ⁽³⁾

- Pain management
- Physical therapy
- Patient education



Pharmacological treatment

Paracetamol and nonsteroidal anti-inflammatory drugs

- First-line treatment ^(1,2)

Muscle relaxants

- In the setting of acute pain with failure of first-line treatment ^(1,3)

Opioids

- For short durations, to relieve acute pain attacks ⁽¹⁾

Gabapentinoids and antidepressants

- Controversial ^(4,5,6)

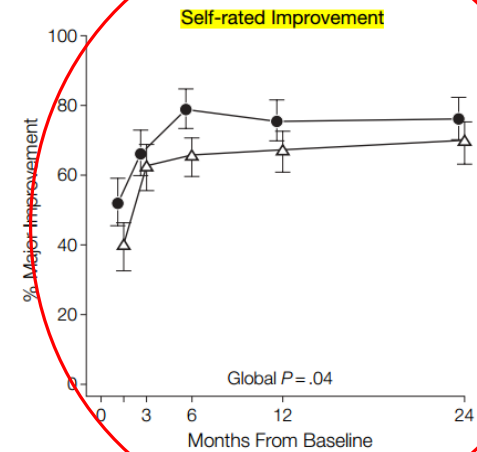
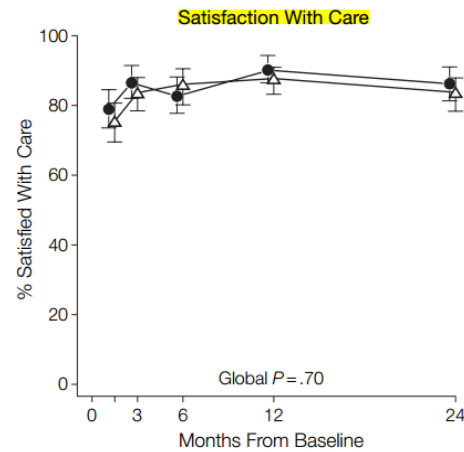
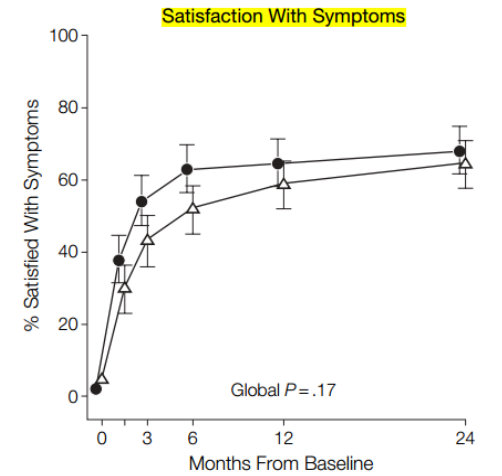
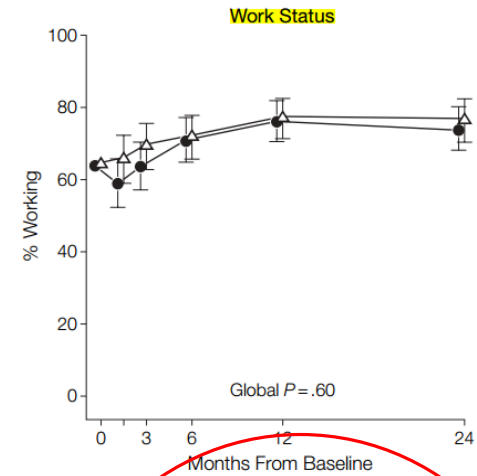
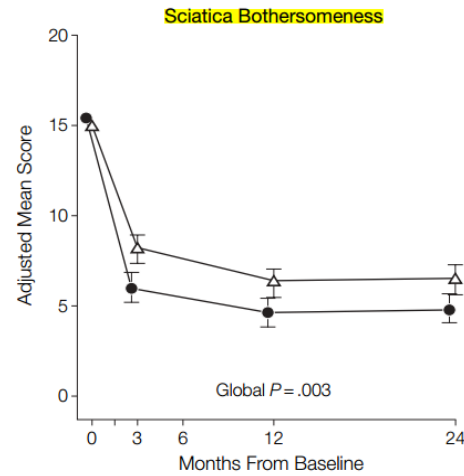
Epidural steroid injection

- Recommended in acute radiculopathy, to provide short-term pain relief ⁽⁷⁾

Surgical vs Nonoperative Treatment for Lumbar Disk Herniation

The Spine Patient Outcomes Research Trial (SPORT): A Randomized Trial

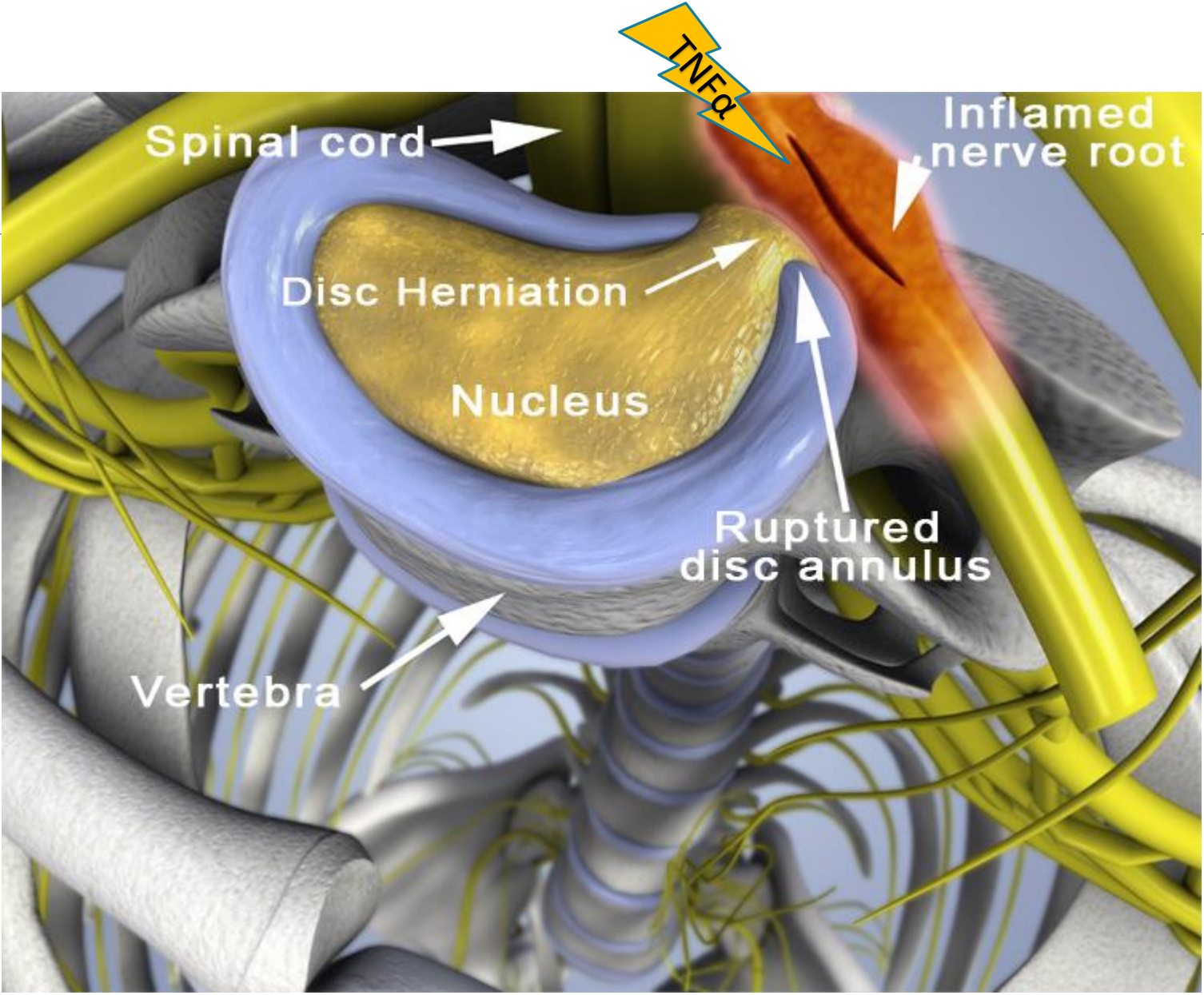
(Weinstein et al., 2006)



● Surgery
△ Nonoperative Care

However, increased utilization of interventional therapies and surgeries were not associated with improved **health status** in patients with low back pain⁽¹⁾.

Hence the need to find new non-surgical options for the treatment of radiculopathy associated with low back pain.



Pentoxifylline

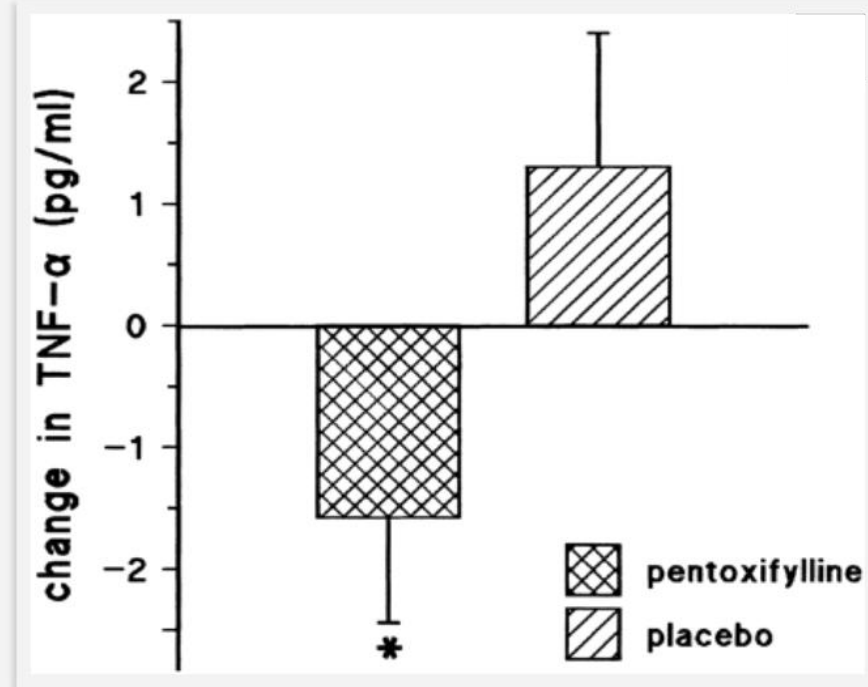


Figure 2. Changes in plasma TNF-α produced by 6 months of pentoxifylline or placebo.

* $P < 0.05$, placebo vs pentoxifylline, change from baseline to 6 months

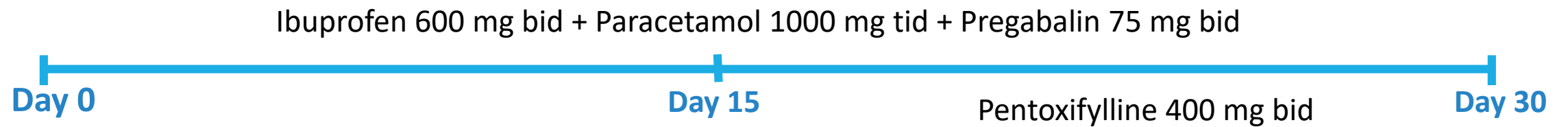
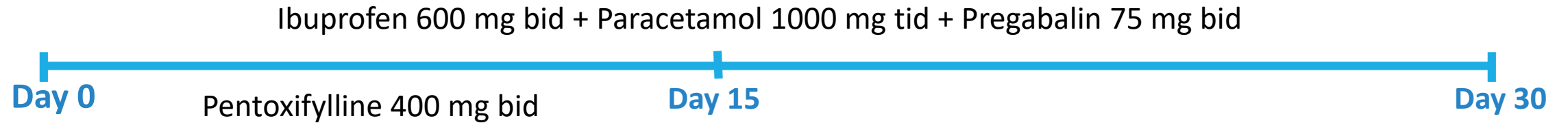
To our knowledge, the analgesic effect of pentoxifylline was never studied before, especially in the context of radiculopathy.

Thus, we conducted a prospective, randomized crossover, single-blind controlled study to test the **efficacy** and **tolerance** of this molecule administered per os (**800 mg daily, bid**) in patients with **radicular pain** secondary to degenerative lumbar spine disease.

Materials and methods

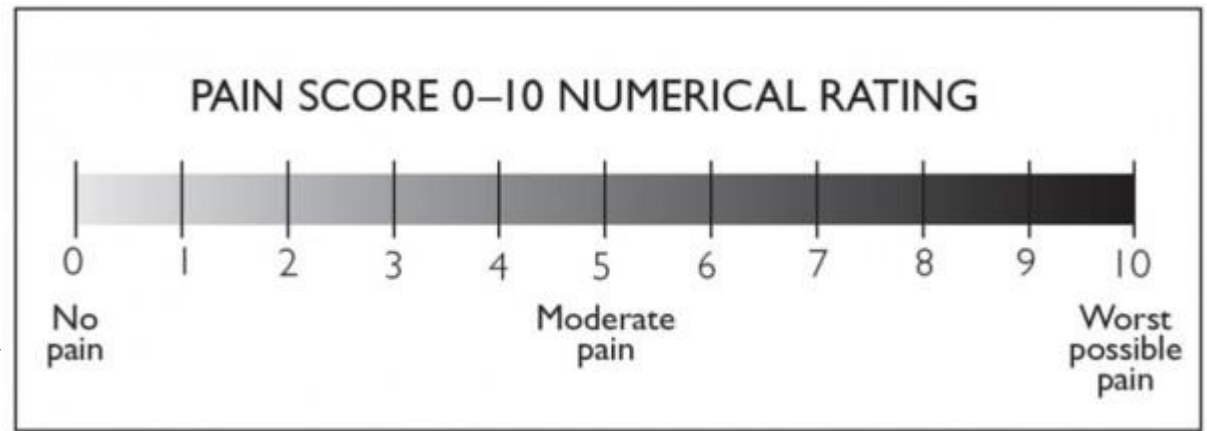
Patient selection

- Fifty-eight consecutive patients
- Between September 2014 and January 2017
- Inclusion criteria
 - Age above 18
 - Patients having lumbar disc herniation
 - Radio-clinical concordance
 - Urgent surgical treatment is not indicated



The sequence order of pentoxifylline was randomized and **was unknown to the investigator**

From Day 0 to Day 30 : Pain diary x4/day



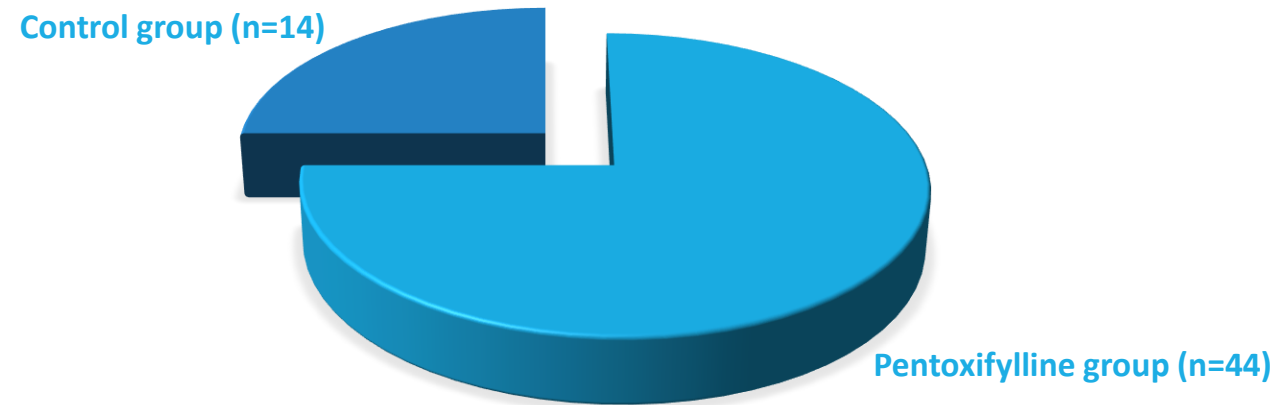
At Day 15 and Day 30 : PGIC

1 Very Much Improved	2 Much Improved	3 Minimally Improved	4 No Change	5 Minimally Worse	6 Much Worse	7 Very Much Worse
Domain						Rating (1 to 7)
Question: indicate how you feel now, compared to how you felt before 15 days						
1. How are you doing overall?						
2. How are your physical activities?						
3. How are your social activities?						
4. How are your work-related activities (including household work)?						
5. How is your mood?						
6. How is your pain?						

Total area under curve (AUC) of pain, was considered the primary outcome measure

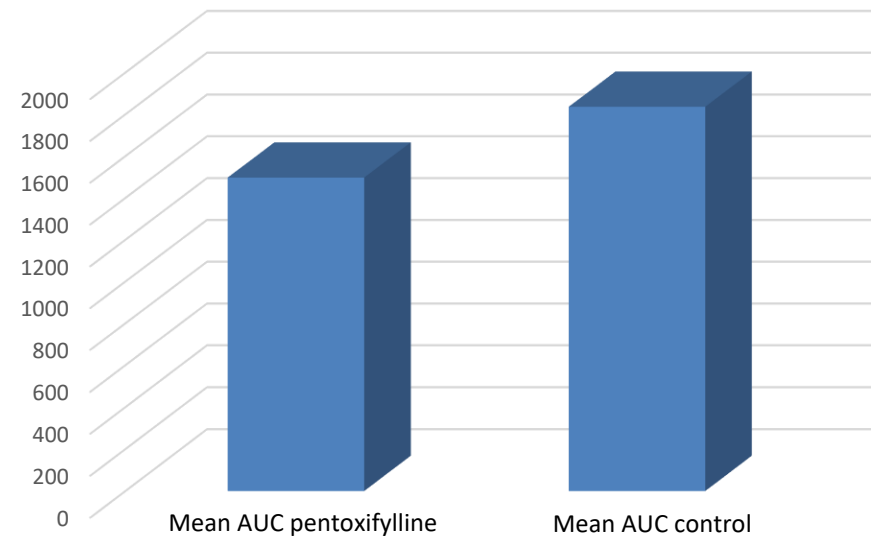
- = $\sum [(\text{Values of pain on the pain diary}) \times (\text{Period of assessment})]$, *pain unit x hour*

Results



PATIENTS REPORTING LESS TIME IN PAIN AFTER TREATMENT

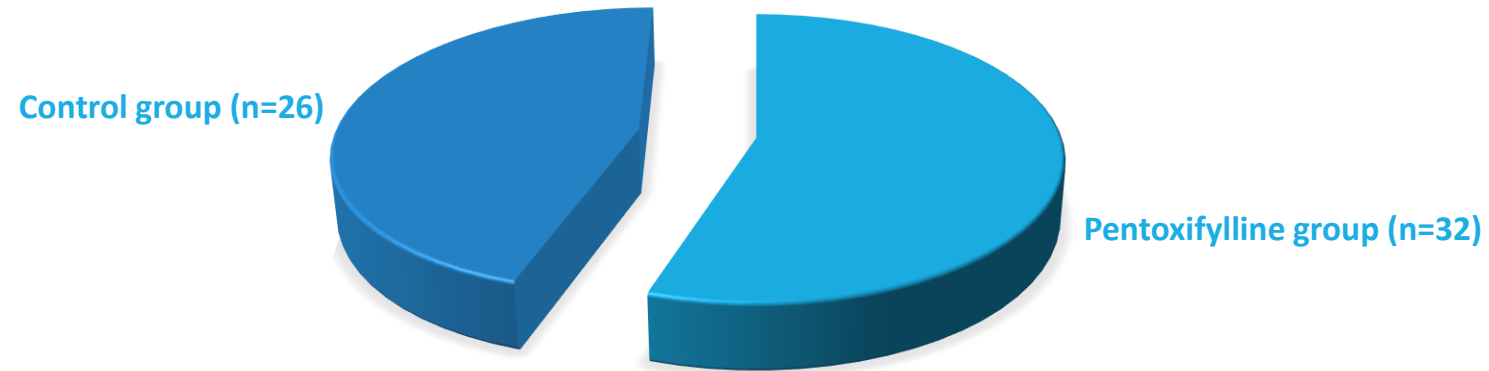
Results



($p < 0,0001$)

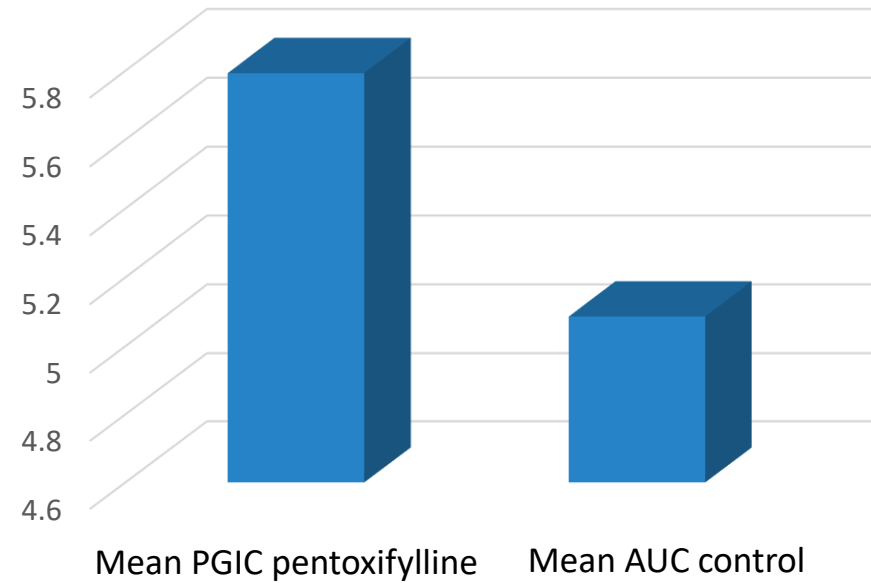
MEAN AUC IN THE PENTOXIFYLLINE GROUP AND IN THE CONTROL GROUP

Results



**PATIENTS REPORTING SELF-RATED IMPROVEMENT AFTER
TREATMENT AT DAY 15 AND DAY 30**

Results



($p < 0,0001$)

MEAN PGIC IN THE PENTOXIFYLLINE GROUP AND IN THE CONTROL GROUP

Conclusion

Adjunction of Pentoxifylline to the standard medical treatment of radicular pain associated with lumbar disc hernia seems to **significantly decrease** patients' pain **intensity** and **duration** in addition to improving their **global satisfaction** with treatment.