EPIDURAL STEROIDS HAVE AN IMPORTANT ROLE IN CHRONIC PAIN MANAGEMENT

ATHINA VADALOUCA
Ass. Professor of Anaesthesia, Pain Therapy and Palliative Care
University of Athens, Greece
“In this age of accountability, it is imperative that therapies with questionable benefits be critically evaluated”

Kepes, 1985
Epidural steroids as treatment of:

- Sciatica
- Low back pain
- Radiculopathy
- Lumbosacral radicular pain
- Lumbosacral discogenic pain
- Related conditions

Established for the last 50 years
Epidural steroid injection

Important treatment in achieving the goals of chronic pain management of the Lower and Upper extremities
Use of EPIDURAL STEROIDS founded upon their:

- Anti-inflammatory action
- Analgesic Benefits
EPIDURAL STEROIDS

affect

- Collagen synthesis
- Material strength
- Tissue healing

Vadalouca A, 2000
EPIDURAL STEROIDS relieve pain by:

- Reducing inflammation
- Blocking the transmission of nociceptive C-fiber input

Vadalouca A, 2000
Chronic pain complaints are common in **economically developed countries**.
Approximately 30% of the population of such countries suffer from chronic pain

Bonica, 1987
70,000,000 Americans report chronic pain, of whom more than 50 million are partially or totally disabled for periods ranging from a few days to weeks or months.

Bonica, 1987
Some are permanently disabled !!! ....

Bonica, 1987
A significant proportion of chronic pain problems relate to low back pain.
“Medical Back Problems” and back and neck procedures in those under 70 are the third and thirtieth most common reasons, respectively, for the US hospital admission.
Review of the **international literature** on **back pain**

Data presentation selected from **Canada, Sweden & US**

Raspe H et al, 1993
Back Pain is the first or second most prevalent pain complaint.

Raspe H et al, 1993
The average sufferer has
- a long history
- multiple episodes

Chronic, Continuous back pain
accounts for as much as one quarter of total prevalence

Raspe H et al, 1993
The proportion of back pains that occur more than occasionally manifest themselves in a broad range of seriousness with 15% to 37% severe cases.

Raspe H et al, 1993
Women are generally more often affected than men, though not statistically significantly so.

Raspe H et al, 1993
There is unequivocal influence of AGE
- Back Pain: very common
- 80% of population: back pain at some time in their life
- 40% of population: back pain in the last month
- 50% of the attacks settle completely within four weeks
- 15 – 20% of patients continue to have symptoms for at least a year
- 70% of people who experienced an attack may suffer 3 or more recurrences

Wells JCD, 2000
4% of **UK population** up to age of 44, and 5 – 7% of those older will report back problems as a chronic sickness

Wells JCD, 2000
In UK disability is increasing greatly, as can be seen from time off work.

Wells JCD, 2000
Looking at this trend over the last decade, the whole working population will be sick by the year **2017** !!! …

Wells JCD, 2000
Thus, inspite of all our knowledge, inspite of our health service and inspite of research and evidence – based medicine, we seem to be getting things terribly wrong in low back pain

Wells JCD, 2000
CAUSES of

- Low Back Pain
  and especially of
- Radicular Pain
The mechanical compression of the root by a herniated disk causes radicular pain

Mixter WJ & Barr JS, 1934
Not only the \textit{compression}, but also subsequent \textit{inflammation} were responsible for the pain.

\textbf{Kelly M, 1950}
Histological demonstration of inflammation in the nerve roots of patients with sciatica presented for operative procedures

Lindal O & Reed B, 1950
Injection of autologous nucleus pulposus (NP) into the epidural space of dogs

- Two Groups:
  - I → NP injection
  - II → Normal saline injection
- Injection for five days
- Microscopic analysis

McCarron RF et al, 1987
Injection of autologous nucleus pulposus (NP) into the epidural space of dogs

RESULTS

(microscopic analysis findings)

- Intense *spinal cord* & *nerve root inflammation* in Group I
- Normal findings in Group II

McCarron RF et al, 1987
Injection of autologous nucleus pulposus (NP) into the epidural space of dogs

CONCLUSION

A small amount of NP:
- Extensive *inflammatory response*
- *Not detected* by routine laboratory examinations
- Causes *clinical symptoms* of radiculopathy

McCarron RF et al, 1987
Disk material: ↑ concentration of Phospholipase A2 (PLA-2)

- PLA-2: enzyme
- Liberates arachidonic acid from cell membranes
- Toxic spill of PLA-2
  - Radicular Pain
  - Surrounding neural tissue: Intense inflammatory reaction

McCarron RF et al, 1987
Saal JS et al, 1990
Lumbar radiculopathy:
?- PLA-2
?- Epidural steroids

- The behavioural pattern changes observed in the irritated nerve root model are caused in part by a high level of PLA-2 activity initiated by inflammation.

- The mechanism of action of epidural steroid injection is inhibition of PLA-2 activity.

Lee HM et al, 1998
In patients with **radiculopathy**, **Inflammation** is the pathological process.

*Lee HM et al, 1998*
Epidural steroid injections are a valuable treatment alternative for patients in whom there is reasonable evidence of nerve root irritations.

Vadalouca A, 2000
Epidural steroid injections are a valuable treatment alternative when such therapy is provided within the intellectual context of a pain programme management.

Vadalouca A, 2000
Factors that influence the outcome of ES injections

- **Accuracy** of diagnosis of nerve root inflammation
- **Duration** of symptoms
- **History** of previous surgery
- **Age** of patient
- **Location** of the injection

Sandrock NJG & Warfield CA, 1993
Evaluation process

Patient Selection

I. Patient’s History

II. Physical examination

II. Laboratory findings
Patient’s History

The duration of symptoms is important to be established, because those patients with week or few – month old symptoms generally have a higher response rate than those with a history of complaints longer than a year.

Berman AT et al, 1984
Benzon HT et al, 1986
Physical Examination

- Poor physical condition
- Fatigue
- Anxiety

Contributory factors

Raj PP, 1998
Laboratory Studies

Although findings from physical examination lead to successful treatment imaging results cannot give a definite diagnosis.

Hopwood MB et al, 1993
Fukusaki M et al, 1998
Laboratory Studies

- Poor association between clinical symptoms and imaging results
- Patients with radiculopathy and positive CT findings:
  - 90% good / excellent outcome after ES
- Negative CT findings do not exclude a treatment with ES

Hopwood MB et al, 1993
Fukusaki M et al, 1998
EPIDURAL STEROIDS

Still controversial
Controversies:

- Efficacy
- Indications
- Contraindications
- Which steroid is injected
- How often
- Toxicity
- Side effects – complications
- Fluoroscopy
- Aspirin - NSAIDS

Raj PP, 1998
Intraoperative application of ES such as MP, in a unilateral low – lumbar discectomy, leads to shorter hospital stay because of less pain and spasm

Davis R et al, 1990
Epidural administration of corticosteroids is effective in the management of lumbosacral radicular pain.

METAANALYSIS

Wafts RW et al, 1995
Epidural steroids injections are important in achieving the goals of **acute** and **chronic** pain management.

Rowlingson CJ et al, 1996
With proper **patient selection** in approximately **66% of patients**

- Shortening of **illness period**
- Decrease in pain **frequency**
- Decrease in pain **intensity**
- Rapid physical **rehabilitation**
- Shorter **hospital stay**
- Greater ability to **function**
- Sooner return to **work**

Rowlingson CJ et al, 1996
Refinements in our understanding of the pathophysiology of radicular pain and in the techniques used to deliver *epidural depo-steroids* to the target tissue will lead to improved clinical outcomes.

Mullighan KA & Rowlingson CJ, 2001
Is **fluoroscopy** really necessary?

Fredman M et al, 1999
Comparative studies are necessary to clearly define the advantages and disadvantages of the use of fluoroscopy and the transforaminal technique.

Mullighan KA & Rowlingson CJ, 2001
Observational study of the frequency and pattern of use of epidural steroid injection in 25479 patients with spinal and radicular pain

Fanciullo GJ et al, 2001
Patients with symptom duration between 1 month & 1 year were more likely to have ES recommended.

Fanciullo GJ et al, 2001
Fluoroscopy with radiographic contrast and precise epidural steroid placement suggests that ES injections may obviate surgery in some patients with true radicular pain.

Cannon DT et al, 2000
Fluoroscopically guided transforaminal injections serve as an important tool in non-surgical management of lumbosacral radiculopathy secondary to a herniated *nucleus pulposus*.

Vad VB et al, 2002
After ES injection it was observed that the *epidural infusion pressure* and *resistance* was significantly *less* when measured after 3 weeks of injection, in patients with *degenerative spinal disease*. This change may indicate *efficacy from epidural steroid injection*

Dunbar SA et al, 2002
Epidural Steroids administration is effective in the management of acute and chronic pain if patients are properly selected.
Epidural Steroid Injection