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Peripheral subcutaneous nerve stimulation (PNFS) in neuropathic pain - 10 Years experience

A.Koulousakis, G.Matis, A.Chatzicalfas

Clinic for Stereotaxy and Functional Neurosurgery, University of Cologne, Germany

Introduction:

After the introduction of stimulation techniques for the treatment of chronic pain by means of SCS and PNS in the 70s, PNS-stimulation for treating mononeuropathy, as well as sympathetic pain (Weinert 2003), underwent a renaissance.

Patients and Methods:

Following the convincing results, introduced by Barolat 2004, we performed a so called "Periphere Field Nerve Stimulation" pilot study from May 2005 to February 2006 in 31 patients and due to the encouraged results in further 45 patients mainly with neuropathic pain until January 2010 and until the end of December of 2012 increased to 405 patients Indication was a well described exactly localized area of pain, partly connected to allodynia. The patients suffered from different pain syndromes mainly lumbar pain (90%), occipital neuralgia, knee pain after operations, post-thoracotomy syndromes , postherpetic pain, neuropathic facial pain, phantom pain, CRPS I and pain after inguinal hernia operations.(Tab 1) Leads were implanted, allowing accessing the outer border of the pain area.

After a one-week or longer trial-phase, the trial electrodes were removed and replaced by permanent subcutaneous electrodes in the same location, which were connected to a programmable IPG in one step.

PNFS (n=405/352 = 86,9 %)
Mai 2006- September 2012

		Trial	Implanted
1.	Lumbar pain	248	231
2.	CRPS I	23	20
1.	Cervical pain	43	32
2.	Thoracal pain	21	12
3.	Trigeminus-Neuropathie	12	10
4.	Postherpetic pain	17	14
5.	Phantom pain	16	13
6.	Occipital Neuralgia	8	7
7.	Coccycodynia	5	2
8.	Gonarthrosis	6	5
9.	Ulnaris Neuropathy	3	3
10.	Migraine	3	3

Table 1

Results

The patients were assessed, both post-operatively and after a follow-up period of 6 mo,12 mo and 3 years, using the VAS scale, Drug-reduction and improvement in QoL (CSS,Cologne Scale).
Eleven out of 31 patients in the pilot study (33%) , 33 out of 48 (68,8%) in the following time and 352 out of 405 (86,9%) in the 7 years practice, who received an implantation of one to four leads(Fig 1) and underwent a minimum of one week trial-phase, received an implantation of a complete system and reported pain relief up to 70%.We didn't observed a significant drug reduction , but improvement in QoL and Daily Activities(Fig 2)

Discussion

Approximately 70% of the patients displayed a pain relief of more than 50% for a period of up to three years as well as significant improvement in QoL particular in older patients. The better outcome can be explained through stricter selection of patients and good indications with clear pain-syndromes,the right depth and placement of the leads as well as additional usage of SCS

Conclusion

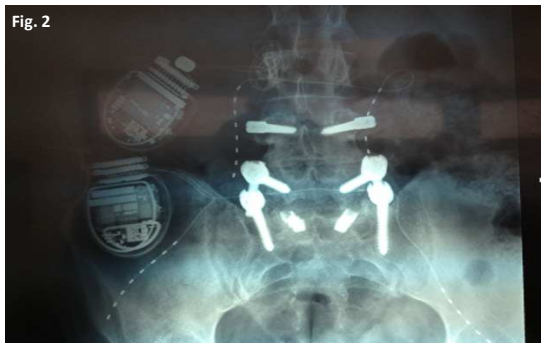
PNFS is a simple, promising method, with the best indication being a well localized pain, and can be considered as the first step of invasive pain therapy (Tab 2) for treating well described pain emission especial with neuropathic components. The operation technique is very simple and of low risk, however, long term results have to be awaited.

PNFS and Lumbar pain-VAS/CSS
(n=62 pat>80 years, 2009-2012)

Prae	Trial	Post	3M	6M	1y	3y
VAS						
8,8	2,4	2.6	2,7	3,0	3,5	3,9
CSS						
27	19	18	15	13	11	8

Fig. 1

Fig. 2



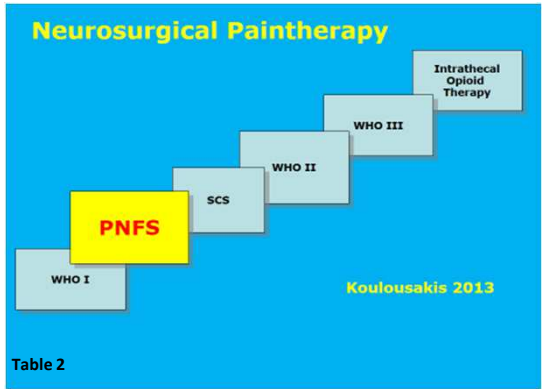


Table 2