

Omega-3 Fatty Acids for Neuropathic Pain: Case Series
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FROM ABSTRACT:

OBJECTIVE: The aim of this case series study was to investigate and report on patients with neuropathic pain who responded to treatment with omega-3 fatty acids.

METHODS: Five patients with different underlying diagnoses including cervical radiculopathy, thoracic outlet syndrome, fibromyalgia, carpal tunnel syndrome, burn injury were treated with high oral doses of omega 3 fish oil (varying from 2400-7200 mg/day of EPA + DHA).

Outcome measures were obtained pretreatment and post-treatment. These included validated surveys (short-form McGill Pain questionnaire, DN4 neuropathic pain scale, Pain Detect Questionnaire), objective clinical tools (Jamar grip strength, Lafayette dynamometry, tender point algometry) and EMG Nerve Conduction studies.

RESULTS: These patients had clinically significant pain reduction, improved function as documented with both subjective and objective outcome measures up to as much as 19 months after treatment initiation.

No serious adverse effects were reported.

CONCLUSIONS: This first-ever reported case series suggests that omega-3 fatty acids may be of benefit in the management of patients with neuropathic pain.

THESE AUTHORS ALSO NOTE:

The benefits of omega-3 fatty acids supplementation are well documented in the literature for the prevention and management of a wide variety of health conditions including:

- Inflammatory joint pain
- Chronic spinal pain
- Autoimmune disease
- Cardiovascular disease
- Depression
- Fibromyalgia syndrome

The probable mechanism for the benefit of omega-3 supplementation in the treatment of inflammatory pain is through the suppression of the pro-inflammatory eicosanoids (Prostaglandin E2, Leukotriene B4).

This is the first study to assess the use of omega-3 supplements in the treatment of neuropathic pain. Neuropathic pain can exist in the absence of pro-inflammatory eicosanoids. Rather, neuropathic pain is linked to pro-inflammatory cytokines.

These authors present 5 case studies on neuropathic pain patients:

CASE 1: C7 radiculopathy

53 year-old patient was disabled with a C6-C7 disc herniation compression the C7 nerve root, complicated with spinal stenosis and multilevel degenerative disc disease. Prior treatment with physiotherapy and NSAIDs failed to improve his condition.

After 2.5 weeks of supplementing with 4,800 mg of EPA + DHA fish oil his signs and symptoms began to subside. After 8 months of supplementation he was much improved and began to play competitive hockey again. After 19 months he appeared to be cured with no signs of symptoms, being able to play full equipment ice hockey. If he neglected to take his omega-3s for 4 days, his symptoms would begin to return.

CASE 2: Thoracic Outlet Syndrome and Fibromyalgia Syndrome

48 year-old nurse was injured while working and eventually diagnosed with thoracic outlet syndrome and fibromyalgia. Prior treatment with physiotherapy and pharmacology failed to improve her condition.

After 7 months of supplementing with 2,400 mg of EPA + DHA fish oil, she was much improved, and by 13 months, she was essentially cured of both syndromes.

CASE 3: Post-traumatic (whiplash) cervical radiculopathy

50 year-old man with chronic whiplash injury resulting in C6-C7 midline disc protrusion, complicated by severe spinal stenosis C5-C6 and C6-C7. The patient was significantly disabled. Prior treatment with physiotherapy, chiropractic, massage, and NSAIDs failed to improve his condition.

After supplementing with 7,200 mg of EPA + DHA fish oil his signs and symptoms began to subside. Soon he "reported no pain during activity and was able to actively work out in the gym. He also reported of sharper brain function and feeling clear-headed."

CASE 4: Carpal Tunnel Syndrome

47 year-old man with a 2.5-month history of carpal tunnel syndrome. He began supplementing with 3,000 mg of EPA + DHA.

After 8 months of treatment, "his global symptom score for carpal tunnel syndrome decreased and electrodiagnostic examinations showed marked improvements. He improved to the point where surgery was not needed. He continued with fulltime work and was very pleased with the effects of the omega-3 fatty acids."

CASE 5: Burn injury

54 year-old man sustained 2nd and 3rd degree burns over 30% of his body from exposure to hot oil. He was hospitalized for 40 days and underwent extensive skin grafting. He remained in severe pain requiring extensive medication including morphine. His extensive pain was eventually managed with high-dose omega-3 supplementation, and he was able to wean off of morphine.

DISCUSSION

Patients taking Coumadin (or other blood thinners) should slowly begin to take omega-3s while monitoring clotting times.

Because of the blood thinning effects of omega-3s, patients should stop taking them 2 weeks prior to surgery, dental work, or invasive procedures such as a colonoscopy.

Patients taking omega-3s should have their blood analyzed for the arachidonic acid (omega-6) (AA) / eicosapentaenoic acid (omega-3) (EPA) ratio.

AA/EPA

"An optimal ratio for cardiovascular health is 1.5/1 to 3/1."

The lab analysis is especially important if the patient is taking more than 7,500 mg of EPA + DHA per day.

"An AA/EPA ratio of 0.5/1 is associated with an increased risk for hemorrhagic stroke."

Fish oils should be purified.

"A recommended conservative dose is 2,700 mg of EPA + DHA. However, a more aggressive approach for more severe pain can be up to 7,500 mg of EPA + DHA. This will require serum laboratory tests to monitor AA/EPA ratio."

"Patients should clearly be instructed to take only omega-3 and not omega-6 to omega-9. The omega-6 fatty acids are pro-inflammatory and the use of such products will not help in relieving pain."

Although omega-6 fatty acids are essential, they are already in excess in the typical American diet.

Pain patients must also reduce their intake of arachidonic acid (omega-6) (AA), which is commonly found in red meat and fried foods.

The conversion of alpha linolenic acid (ALA) (plant omega-3) to the anti-inflammatory EPA omega-3 is enhanced with adequate levels of vitamin B6, magnesium, and zinc.

The conversion of alpha linolenic acid (ALA) (plant omega-3) to the anti-inflammatory EPA omega-3 is impaired by trans fats and caffeine.

“To conclude, the use of omega-3 fatty acids supplements for the treatment of neuropathic pain shows promise, on the basis of these case studies.”

KEY POINTS FROM DAN MURPHY

- 1) The benefits of omega-3 fatty acid supplementation are well documented in the literature for the prevention and management of a wide variety of health conditions including:
 - Inflammatory joint pain
 - Chronic spinal pain
 - Autoimmune disease
 - Cardiovascular disease
 - Depression
 - Fibromyalgia syndrome
- 2) The probable mechanism for the benefit of omega-3 supplementation in the treatment of inflammatory pain is through the suppression of the pro-inflammatory eicosanoids (Prostaglandin E2 [PGE2], Leukotriene B4 [LTB4]).
- 3) This is the first study to assess the use of omega-3 supplements in the treatment of neuropathic pain. Neuropathic pain can exist in the absence of pro-inflammatory eicosanoids. Rather, neuropathic pain is linked to pro-inflammatory cytokines (proteins made by immune system cells).
- 4) These authors present 5 case studies on chronic neuropathic pain patients with excellent results. The patients were treated with high oral doses of omega 3 fish oil (varying from 2400-7200 mg/day of EPA + DHA). Results were excellent both subjectively and objectively for all five, which included:
 - Cervical radiculopathy
 - Thoracic outlet syndrome
 - Fibromyalgia
 - Carpal tunnel syndrome
 - Burn injury
- 5) No serious adverse effects were reported from taking high oral doses of omega 3 fish oil (varying from 2400-7200 mg/day of EPA + DHA).
- 6) Patients taking Coumadin (or other blood thinners) should slowly begin to take omega-3s while monitoring clotting times.

- 7) Because of the blood thinning effects of omega-3s, patients should stop taking them 2 weeks prior to surgery, dental work, or invasive procedures such as a colonoscopy.
- 8) Patients taking omega-3s should have their blood analyzed for the arachidonic acid (omega-6) (AA) / eicosapentaenoic acid (omega-3) (EPA) ratio.
AA/EPA
- 9) "An optimal [**AA/EPA**] ratio for cardiovascular health is 1.5/1 to 3/1."
- 10) The lab analysis of [**AA/EPA**] is especially important if the patient is taking more than 7,500 mg of EPA + DHA per day.
- 11) "An AA/EPA ratio of 0.5/1 is associated with an increased risk for hemorrhagic stroke."
- 12) Fish oils should be purified.
- 13) "A recommended conservative dose is 2,700 mg of EPA + DHA. However, a more aggressive approach for more severe pain can be up to 7,500 mg of EPA + DHA. This will require serum laboratory tests to monitor AA/EPA ratio."
- 14) "Patients should clearly be instructed to take only omega-3 and not omega-6. The omega-6 fatty acids are pro-inflammatory and the use of such products will not help in relieving pain."
- 15) Although omega-6 fatty acids are essential, they are already in excess in the typical American diet.
- 16) Pain patients must also reduce their intake of arachidonic acid (omega-6) (AA), which is commonly found in red meat and fried foods.
- 17) The conversion of alpha linolenic acid (ALA) (plant omega-3) to the anti-inflammatory EPA omega-3 is enhanced with adequate levels of vitamin B6, magnesium, and zinc.
- 18) The conversion of alpha linolenic acid (ALA) (plant omega-3) to the anti-inflammatory EPA omega-3 is impaired by trans fats and caffeine.
- 19) "To conclude, the use of omega-3 fatty acids supplements for the treatment of neuropathic pain shows promise, on the basis of these case studies."

Cyclo-oxygenase (COX)/Lipo-oxygenase (LOX) Pathways

