Charcot Arthropathy in Patients with Idiopathic Neuropathy

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My disclosure is in the Final AOFAS Mobile App.

I have no potential conflicts with this presentation.
Cause of Neuropathy

• Charcot arthropathy most associated with diabetic neuropathy

• Rarely related to other causes of neuropathy
  – Polio, Medications, Leprosy, Syphilis, etc.

• Some patients present with no identifiable neuropathic condition
Idiopathic Neuropathy

- Very common
  - 15% Americans ≥ 65 have peripheral neuropathy
- Idiopathic Neuropathy is sensory predominant
- It is a peripheral neuropathy
- And is slowly progressive
Study Purpose

• To investigate a series of patients with Charcot arthropathy associated with idiopathic peripheral neuropathy
  — to evaluate the natural history in these patients
  — to evaluate the efficacy of treatment protocols used for diabetic charcot joints.
Methods

• Records and radiographs of patients with Charcot arthropathy between 1986 and 2009 were reviewed.
• Patients with known causes of or risk factors for peripheral neuropathy were excluded.
• Data was analyzed for medical history and diagnoses, medications, anatomic classification of Charcot arthropathy, history of ulcerations, ambulatory status, shoe wear and bracing, and surgical interventions.
• Patient care was based on previous published treatment algorithms, based on conservative management with operative intervention reserved for non-healing ulcers, infection, and/or non-plantigrade, unbraceable feet.
• Therapeutic success was a plantigrade foot with healed soft tissue envelope that allowed weight bearing.
Results

- We identified 82 feet in 59 patients with idiopathic neuropathy. Twenty-three (39%) were bilateral.
- The average age was 76 years and the average follow up was 60 months.
- Fifty five percent involved the midfoot (Type 1), 34% the hindfoot (Type 2), and 11% the ankle, (Type 3A).
- Seventy-one of 82 feet were successfully treated at time of last follow-up.
Results

- 36 / 82 feet (43%) treated non-operatively
- Success in 33/36 (92%).
- 3 feet had persistent ulceration at last follow-up
  - 1 indiabetic boot
  - 1 in total contact cast
  - 1 lost to follow up
- Of 33 patients treated successfully, one was in regular shoes, 13 were in shoes with custom orthotics, three in diabetic shoes and 16 in braces
  - Of 16 braces, 13 AFO’s and 3 bivalved custom CROW walker
Results

• 46 / 82 feet required surgery, with success at last follow-up in 38 (83%).
  – There were 8 surgical failures: 2 below knee amputations and 6 feet with persistent ulceration.
  – There were a total of 97 surgeries performed in operative group with an average for 2.1 surgeries per foot.
  – There were 70 debridement type procedures (I&D, exostectomy, partial toe or ray amputation).
  – There were 15 fusions and 10 other procedures (ie ORIF, hammer toe correction).
Discussion

- To the best of our knowledge, this is the first reported series of patients with Charcot arthropathy, associated with idiopathic neuropathy.
- Patient treatment protocols were based on previously described algorithms used to treat Charcotarthropathy of the foot and ankle in diabetic patients.
- Success was noted in 87% of patients in this series.
Discussion

- This work has several limitations. First, is its retrospective nature.
- Second, the diagnosis of idiopathic neuropathy was not made by exhaustive evaluation by a neurologist in each case.
  - This was a clinical decision based upon following considerations
    - Considerable expense
    - Inconvenience to the patients and their families
    - A workup would not have substantively changed the treatment of the Charcot foot and ankle itself.
- However, for each patient, the presence of peripheral neuropathy was confirmed with Semmes-Weinstein monofilament testing.
- Moreover, the absence of diabetes or other known cause of neuropathy was confirmed by the patients’ primary care physician, or by testing with fasting glucose and/or Hemoglobin A1c.
Conclusion

- This study showed that Charcot arthropathy of the foot and ankle associated with idiopathic neuropathy had severity, anatomic distribution, and response to treatment that were similar to those of patients with Charcot arthropathy associated with diabetic neuropathy.

- Further, Charcot Arthropathy associated with idiopathic neuropathy, demonstrated a wider spectrum of Charcot arthropathy of the foot and ankle than has been previously recognized or documented.

- At the present time, heightened awareness is needed to promote accurate diagnosis and appropriate treatment in non-diabetic patients with Charcot arthropathy.