(220) Burden of neuropathic pain on quality of life in the United States: BEAT neuropathic pain observational study

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Neuropathic pain (NeP) may result from physical injury/trauma, systemic disease, infections and autoimmune disorders, and has been shown in painful diabetic neuropathy (pDPN) to be associated with reduced quality of life and functioning. This observational study sought to comprehensively characterize the humanistic burden of NeP, by pain severity. A total of 624 subjects recruited during routine physician office visits had a diagnosis of one of the following: human immunodeficiency virus (HIV)-related NeP, post-trauma/post-surgical (PTPS) NeP, spinal cord injury (SCI)-related NeP, chronic low back pain (CLBP) with NeP, pDPN, and painful peripheral neuropathy with small fiber involvement (PPN-SF). Subjects completed a one-time questionnaire containing validated measures of pain severity and pain interference, health status, sleep, and anxiety and depression. Subjects' mean age was 55.5 years; 55.4% were male. Mean number of comorbidities was 3.2. Mean scores overall were 5.5 and 5.6 for pain severity and pain interference (0-10 scale); 31.1 and 42.5 for physical and mental health status (0-100 scale); 0.55 for health utility (-0.1-1.0 scale); 50.5 for sleep problems (0-100 scale); and 8.8 and 8.2 for anxiety and depression (0-21 scale). For each patient-reported outcome, scores were significantly worse among subjects with greater pain severity (all $p<0.0001$). Mean scores for each NeP condition ranged from 5.2-6.0 for pain severity, 5.0-6.6 for pain interference, and 27.2-34.4 and 39.0-45.8 for physical and mental health status, respectively. For each patient-reported outcome, CLBP-NeP subjects reported the worst scores followed by PTPS subjects, except for mental health status, utility, and anxiety, where HIV-NeP or SCI-NeP subjects reported one of the two worst mean scores. Subjects across NeP conditions exhibited high pain levels, which were statistically significantly associated with poor function, compromised health status and sleep, and increased anxiety and depression, indicating substantial humanistic burden. Study supported by Pfizer, Inc.

(221) A pilot study of sensory responses to the thermal grill in persons with spinal cord injury and neuropathic pain

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Chronic neuropathic pain (NP) occurs in approximately 40% of persons with spinal cord injury (SCI), but little is known about the mechanisms underlying this condition, and effective treatments are lacking. Previous investigations of differences in somatosensory function between persons with SCI and NP (SCI-NP) and persons with SCI without NP (SCI-noNP), using tactile, thermal, and pain thresholds, have produced equivocal results. We conducted a pilot study to measure responses to a complex thermosensory stimulus, the "thermal grill" (TG), in SCI-NP and SCI-noNP subjects. The TG illusion refers to the painful burning sensation that is typically elicited when warm ($\sim$40°C) and cool ($\sim$20°C) stimuli are presented in close proximity, despite the fact that presentation of these stimuli alone does not evoke pain. The paradoxical pain sensation evoked by the TG relies on central integration of thermal afferent information, which has been suggested to be disrupted in persons with central NP. Therefore, we hypothesized that SCI-NP subjects would show greater disruption of thermal integration, as measured by TG thresholds, compared to SCI-noNP subjects. Persons with chronic SCI were consented and completed a detailed pain history to establish group membership: SCI-NP or SCI-noNP. Thermal grill pain thresholds (TGPT, and independent cold pain and hot pain thresholds (CPT, HPT) were measured on the skin in the dermatome at the neurologically-determined level of injury for each subject. Severity of NP-related symptoms was assessed using the Neuropathic Pain Scale (NPS). TGPT relative to CPT, and TGPT relative to HPT, were both significantly different ($p<0.05$) between SCI-NP (n=8) and SCI-noNP (n=5) groups. Severity of NP-related symptoms (NPS10 score) was significantly correlated with TGPTs ($r=0.579$, $p<0.05$). The results from our pilot study provide preliminary evidence that mechanisms underlying the central integration of thermal information differ between persons with SCI and NP and those without NP.

(222) Painful diabetic neuropathy - clinic communication gaps and opportunities

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Nearly 19 million Americans (8.3% of the population) have diabetes and it is estimated that another 7 million are yet undiagnosed. About 60% to 70% of people with diabetes have mild to severe forms of nervous system damage and neuropathic symptoms are common associated symptoms. We surveyed 1004 US adults with Type I or Type II diabetes experiencing any symptoms of diabetic peripheral neuropathy (DPN). We also surveyed 500 healthcare practitioners who treat patients with diabetes Healthcare providers estimate a lower prevalence of pain symptoms (41%) than patients report (83%); and estimate a lower impact on daily activities (38%) than patients report (77%). Despite painful symptoms and limitations in daily activities, fewer than half of patients with diabetic nerve pain are formally diagnosed. Fewer than half of those with painful DPN say they speak about it regularly with their doctors and most say that symptoms are discussed only briefly or in passing (72%) rather than in detail (28%). Nearly three quarters (73%) of HCPs report discussing DPN symptoms at most or all visits, and 45% report that when they speak about these symptoms they are discussed in detail. Misperceptions about how to manage DPN are common among both patients and healthcare providers. There are substantial disparities in patient report and clinician estimations. Targeted educational outreach and tools that facilitate clinical communication between patients and health care providers in the area of diabetic neuropathy may have significant impact given the high prevalence of the problem and the demonstrable disparities in patient experiences and provider perceptions. Supported by a grant from Pfizer.

(223) An evidence-based assessment and treatment plan for arachnoiditis

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Arachnoiditis is a relatively rare and under-diagnosed condition that can affect many patients differently. Most cases are incidentally discovered on radiologic imaging.[1] After treating a patient in our institution with lumbar arachnoiditis, we performed a literature review to determine the epidemiology and the most optimal treatment plan for arachnoiditis. The term "arachnoiditis" was used as the search subject, and no distinction was given for cervical, thoracic, or lumbosacral anatomic location. The following medical search databases were utilized: Pubmed, Cochrane Library, United States National Library of Medicine, MDConsult, Medscape, Google and Google Scholar, Merck Manual, Web Directory of Medical Education, and UpToDate. After examination of the resulting papers and reports, 30 publications were found that the abstract's authors felt were of clinical relevance towards our case patient. Due to the relatively rare prevalence of arachnoiditis, randomized clinical trials are not available to formulate a recommended treatment algorithm.[2] Multiple etiologies were suggested in our literature review including, but not limited to, prior spinal surgery, neuraxial anesthesia or steroid injections, infection, lumbar puncture, subarachnoid hemorrhage, and syringomyelia. Magnetic resonance imaging is currently the recommended imaging modality of choice.[1,3,4] Treatment options include non-steroidal anti-inflammatory drugs, narcotics, steroids, spinal cord stimulators, and microsurgery. Arachnoiditis is a rare condition, and treatment often needs to be individualized for each patient. Further research on arachnoiditis will likely be beneficial in determining optimal treatment plans for these patients. (1. Koerts G, et al., *Clin Neurol Neurosurg*, 2007; 2. Rice I, et al., *Br J Anaesth*, 2004; 3. Kalina J, *J Pain Palliat Care Pharmacother*, 2012; 4. Thakkar RS, et al., *Radiol Clin North Am*, 2012.)