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Postherpetic Neuralgia

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Independent Study Project: Postherpetic Neuralgia

Abstract

Herpes Zoster is an increasingly problematic disease, with postherpetic neuralgia at the forefront of all complications. A live case report of a 52-year-old male diagnosed with shingles was completed. Extensive education was given to this patient related to the possibility of developing postherpetic neuralgia. From this, a research objective was generated and targeted to identify whether the development of postherpetic neuralgia (PHN) will places a patient at a greater risk for a herpes zoster recurrence.

Research was quite limited on the subject of herpes zoster (shingles) recurrence. This is most likely due to the fact that recurrence numbers are relatively low. Many limitations were found during a literature review due to coding uncertainties, poor documentation, and relying on patient recall. Much of the research was dedicated to risk factors, treatment, and prevention of PHN.

There was a strong research focus on patient education about PHN, specifically risk factors associated with its development. In addition, provider emphasis on administration of the Zostavax vaccine must improve. Another important discovery included, "zoster-associated pain lasting greater than 30 days was a strong predictor of recurrence" (Yawn, et al., 2011, p 91). One could conclude PHN puts a patient at risk for shingle recurrence. There is much to focus our efforts on in the future related to postherpetic neuralgia. So far, only the tip of the iceberg has been touched upon.

Background

Herpes zoster (shingles) is a most agonizing and incapacitating disease. Shingles is a virus that causes a painful rash that follows along a nerve root, typically on the torso. There are an estimated 1 million individuals in the United States each year that are diagnosed with herpes zoster. (Weaver, 2007) Shingles "results in significant morbidity, lost productivity, and diminished quality of life" (Weaver, 2007, p 52). This is evident in the communities we live in, especially in the elderly population. Because this disease affects so many of our elderly, complications can be devastating. Attention to these problems cannot be overlooked.

One of the most common complications of herpes zoster is postherpetic neuralgia (PHN). Postherpetic neuralgia affects nerve fibers and skin. It causes burning pain that lasts long after the rash and blisters disappear. Definitions are often conflicting on the timeline, but the general consensus of PHN is neuropathic pain persisting 3 months after the outbreak of shingles. PHN affects up to one third of patients who were diagnosed with shingles. (Weaver, 2007) This speaks volumes towards the significance of this complication. Postherpetic neuralgia is "the third most common cause of neuropathic pain in the United States, behind neuropathic low back pain and diabetic neuropathy" (Weaver, 2007, p 55). "It is known that post-herpetic neuralgia can persist, in some individuals, for weeks, months, or even years after the herpes zoster rash has healed, causing suffering for the patient and a burden of economic cost on patient, care-givers, and healthcare providers" (Gatti, et al., 2010, p 1007). It obvious how detrimental PHN is, but it is unclear exactly how or why it affects some and not others.

Currently scientists don't know exactly how postherpetic neuralgia develops. Two theories for how PHN develops include: the varicella-zoster virus being reactivated in the ganglion or a persistent low-grade productive virus infection in the ganglia. (Harpaz, et al., 2012)

If one of these theories was proven, the correlation between PHN and shingles could be more clearly defined.

The question that arose from my case report was aimed at the relationship between herpes zoster and postherpetic neuralgia. What I wanted to determine was whether or not patients with PHN have an increased risk for a recurrence of a shingles outbreak.

Case Report

The patient used for this case report is was a 52 year-old, Caucasian male. His chief complaint was a painful rash on his face. While taking the history of his present illness, he reported noticing a painful rash on his face two days ago. He had felt ill for approximately one week and thought he had come down with the flu. He states he thought he had a fever. He denied chills, but did report feeling fatigued. The rash was located only on the left side of his face right around his eye. He stated the lesions look like blisters and were sort of itchy. He denied a rash anywhere else on his body. He described it as a burning sensation that sometimes throbbed. He had tried some Tylenol for the pain, but it had not helped much. The pain did not radiate. The pain did not get better or worse at any certain time of day. He rated the pain 8/10 at times. He stated he had not traveled outside of the country or been in contact with any chemicals or irritants recently. He indicated he believed he had chicken pox when he was a child.

Along with history from his present illness, past medical history was also obtained. He used Tylenol 650mg as needed for pain and had no allergies to drugs, foods or environment. He did not take any other medications regularly. He had no significant medical or surgical history. His family history was unknown. He reported he does not go to the doctor and has never had any sort of physical performed. Immunizations are unknown. For his social history, he reported not

having had health insurance for quite some time. He reported with the recent change with Obama Care he had been able to get on a plan within the last couple of months.

More information was gathered by questioning the patient on a review of systems relevant to the case. He denied fever, chills, fatigue, or night sweats at the current time. He denied dizziness, headache, sinus pain or pressure. He reported no blurred vision. He denied hearing problems, tinnitus or discharge from ears. He had not had any stuffiness or congestion. He hadn't had any difficult or painful swallowing. He reported no lumps, swelling, pain or stiffness in his neck. He denied shortness of breath, wheezing or cough. He reported no chest pain or discomfort. No heart palpitations. He denied headaches, dizziness, numbness, tingling or seizures. He accounted for no loss of memory or concentration.

The patient vital signs were: Temperature: 97.4, Pulse: 88, Respiration: 16, Blood Pressure: 152/92. The patient was in no acute distress. He was alert, oriented and cooperative. His head was normocephalic. No masses or tenderness were palpated. There were several small vesicles consistent with herpes zoster on the left side of his face and around his left orbit. His dermatome pathways were inspected. No rashes or lesions were found along any other dermatome with the exception of the face. He had no tenderness to palpation. Next his eyes were inspected. The conjunctiva was clear and sclera white to bilateral eyes. His visual fields were full. His extraocular movements were intact without difficulty. The corneal light reflex was present bilaterally. There were several zoster vesicles present around orbit of left eye. They did not cross over onto the eyelid. His ears were then inspected. There was no deformity or lesions of the auricles. The ear canals were clear and noninflammed. His tympanic membranes were pearly gray without bulging, retraction, scarring or perforation. The landmarks and light reflex was readily visible and nondisplaced to both tympanic membranes. His nose was midline, nontender,

and without deformity. His nares were patent bilaterally without a septal deviation or perforation. The turbinates were noninflammed without lesions or polyps. The nasal mucosa was noninflammed and moist. His frontal, ethmoid, and maxillary sinuses were non-tender bilaterally. His lips were pink and moist without bleeding or cracking. His buccal and gingival mucosa was pink and moist without retraction or bleeding. His teeth were in good repair. His tongue was midline, without fasciculation or tremors. The hard and soft palate were intact, uvula was midline and rose on phonation. His neck was supple without any visible scars, masses or deformity. His trachea was midline. He had no lymphadenopathy. His respirations were regular, and unlabored. He had vesicular breath sounds auscultated throughout all lung fields. His heart rate and rhythm were regular. He had no heaves, thrills, or lifts. A regular S1 and S2 sound was audible. No murmurs, gallops or clicks were auscultated. When assessing his neurological status, he was alert, relaxed, and cooperative. His thought processes were coherent. He was oriented to person, place and time. His cognitive abilities were intact.

From the data gathered from his history and physical, a plan was generated. For the Herpes Zoster: a prescription for valacyclovir (Valtrex) 1000 mg taken by mouth every eight hours for seven days was initiated. He was instructed to take the first pill as soon as he gets them. Education was also given on the risk for developing Herpes Zoster ophthalmalcus which is the virus infecting the trigeminal nerve. This could result in blindness. A referral was put in for an ophthalmologist for an appointment as soon as possible. He was instructed to call if he were to develop any loss of vision. Education was also given on possibility of developing the complication of postherpetic neuralgia. He was also advised to receive the Zostavax vaccine to prevent a subsequent outbreak. He was instructed to keep the rash clean and dry to prevent infection. He was also given a prescription for oxycodone five mg to be taken by mouth every

four hours as need for pain. The amount of oxycodone prescribed would have given him enough to last for a week. He was informed the vesicles are contagious until they have crusted over. He was instructed to remain home until that time.

Along with the plan for his zoster outbreak, an incidental finding of elevated blood pressure was also addressed. It was recommended he make an appointment for an overall physical exam. At that time, we can then address his high blood pressure and perform other necessary screening recommendations. He verbalized understanding of the treatment plan and was in agreement. All questions answered to the best of my ability and to his satisfaction. He was instructed to return to clinic in one week for a recheck of his herpes zoster.

Literature Review

The PICO question developing this search was: Does postherpetic neuralgia increase the risk for recurrence of shingles? A search was conducted using the University of North Dakota Harley French Library website. The author used three search engines, CINAHL, Google Scholar and PubMed. In addition, the National Institutes of Health and CDC websites were also utilized. From the stated question, the search was emphasized on postherpetic neuralgia and herpes zoster recurrence. Additionally, the author also performed a search on the National Institutes of Health website. The focus on that particular search was also herpes zoster recurrence.

Google Scholar was the first search engine used. Google scholar is a database that provides access to a large number of articles. "In March 2010, there were 172,000 articles listed on Google Scholar for the phrase evidence-based medicine" (Younger, 2010, p. 40). In order to narrow down results, the search term "what causes shingle recurrence" was used. This yielded 400,000 results. Two articles were selected from the first page that matched relevance.

CINAHL was the second search engine used. CINAHL is a database that provides references to articles from more than 2,800 journals" (Lawrence, 2007, p.779). The use of headings was used to focus the search under full text and limited to articles written in the last seven years. The first search conducted was using the subject term "Postherpetic neuralgia increase risk." This resulted in 182 articles. The author chose one article that correlated with the research. Next the subject term "Postherpetic neuralgia increase risk for recurrence of shingles" was used. This yielded thirteen results. Two were selected for review as they most closely related to the question. A total of three articles were retrieved from this search engine.

The next search engine used was PubMed. PubMed is recognized for "currently including citations and abstracts from over 5,000 life science journals for biomedical articles back to 1948" (Zhiyong, 2011, p. 1). The author searched under the PubMed central (PMC) category with the keyword "shingle recurrence with postherpetic neuralgia." Three articles deemed appropriate were selected at this point. The search was then limited to articles within the last five years. Four results appeared. Two articles were selected.

Lastly, the author investigated the National Institutes of Health website. The National Institutes of Health (NIH) is a biomedical research facility primarily located in Bethesda, Maryland. It is an agency of the United States Department of Health and Human Services. It is the primary agency of the United States government responsible for biomedical and health-related research. Using the search box at the top of the website, the search heading used was "herpes zoster recurrence." Twenty articles appeared. One was chosen.

Many findings are deemed noteworthy related to recurrence rates. According to Yawn, et al., (2007), the overall recurrence rate was only 1.4% within 3 years. This was consistent as Weaver, (2007), reports recurrence rates are estimated at 1-6% in the immunocompetent

individual. A more recent study performed by Yawn, et al., (2011), however, identifies an increase in the number of recurrences for even those who are immunocompetent. This study revealed recurrence "rates of 5.7% for immunocompetent people and 6.2% overall after 8 years" (Yawn, et al., 2011, p 91). It is obvious in the grand scheme of things, that recurrence rates are reasonably low.

Risk factors for herpes zoster and postherpetic neuralgia development were heavily studied. The two were very much grouped together in most every study. The positive risk factors consistently mentioned for both shingles and PHN were: age, female gender, and immunocompromise. One study in particular discloses low IgG3 levels as a significant risk for recurrence. (Yang, et al., 2015) According to Weaver, (2007), a severe rash, severe pain, ophthalmic zoster, and a prodrome were also included in the list. Genetics has been touched on as an area of interest, however, there is currently no evidence supporting a familial risk factor for shingles or PHN. (Gatti, et al., 2010) There is some question on the relatively assumed risk of immunodeficiency. Immunocompromising conditions such as HIV, chemotherapy, or organ transplant were all generally accepted. Conditions such as chronic corticosteroid use, autoimmune diseases such as systemic lupus erythematosus, rheumatoid arthritis, or inflammatory bowel disease could also pose a risk for shingles recurrence. (Mayo Clinic Proceedings, 2011) A study conducted by Johnson & Rice, (2014), also includes diabetes and respiratory disease as relevant comorbidities increasing PHN incidence. This truly opens the door to a wide variety of risk factors. The incidence of diabetes mellitus is increasing in the United States, which would also result in an increased risk for development of postherpetic neuralgia.

The Zostavax vaccine has repeatedly proven beneficial in preventing shingles, postherpetic neuralgia, and recurrence. "The Shingles Prevention Study indicated that in adults

aged 60 years or older, zoster vaccine reduces the incidence of herpes zoster and postherpetic neuralgia" (Keating, 2013, p 1242). The main rationale for the vaccine preventing PHN was the simple fact that it prevents shingles in the first place. One interesting confliction indicates the course of PHN is not clinically important stating, "the clinical course of herpes zoster is relatively benign and that postherpetic neuralgia rarely affects daily life" (Helgason, et al., 2000, p 3). However, the vast majority of studies clearly indicate the benefit of this vaccine. According to Tseng, et al., (2015), the vaccination yields benefits beyond simple prevention of herpes zoster. The vaccine is effective at preventing the most prolonged episodes of PHN. (Tseng, et al., 2015) The vaccine has sound evidence of benefit.

My research specific to the target question of whether developing postherpetic neuralgia increases the risk of a subsequent shingles outbreak was not as clear. Public resources available on the internet such as WebMD and the Mayo Clinic websites provided data on the correlation. According to WebMD, (2014), "you are more likely to get shingles again if you had severe pain from shingles that lasted more than 30 days. This is called postherpetic neuralgia." The Yawn, et al. study completed in 2011 was referred to on the Mayo Clinic website. This too indicated "those who had experienced pain lasting more than 30 days after the initial onset of shingles were more likely to face a recurrence" (Mayo Clinic, 2011). The most credible information came from Yawn and her colleagues' 2011 study. They concluded the same, with pain lasting for 30 or more days at the index episode being a strong predictor of recurrence. (Yawn, et al., 2011) One could assume that pain that remains after 30 days after developing herpes zoster could be referred to as postherpetic neuralgia. Severity level is an obvious limitation with this study as it is a subjective measurement. The question is comparing the pain at 30 days with pain at the three

month mark. This three month timeline marks when postherpetic neuralgia is considered a diagnosis.

Learning Points

There are a few points worth emphasizing that are directly relevant to practice. First, postherpetic neuralgia is a very common complication of the herpes zoster virus. This complication is not well known in practice. (Weaver, 2007) Education is notably lacking on the topic of PHN on a community level as well as in professional practice; relevant risk factors should be recognized in patient care. Advanced age is one of the top risk factors; extra attention should be paid to this population. Postherpetic pain may be misdiagnosed because it is not on the provider's radar.

Second, one of the best ways to prevent postherpetic neuralgia is to receive the Zostavax vaccination. Several studies have shown the benefits of receiving this vaccine. The vaccine will help prevent contraction of the shingles virus, which in turn will also prevent postherpetic neuralgia from developing. One difficulty impacting vaccination rates is the lack of insurance coverage at a younger age for the vaccine. Insurance coverage is needed for those in the 35-65 age groups. Many are interested in being vaccinated, but decline due to cost. (Carr, 2015)

Third, shingle recurrence rates are higher than previously thought. More research and attention should be devoted to the apparently rising rates of occurrence. Studies suggest that postherpetic neuralgia contracted from the initial infection could potentially put a patient at risk for a subsequent zoster outbreak. This conclusion is based on studies performed by Yawn, et al. From this information, the provider could drive home the importance of obtaining the vaccine. If the risk for recurrence is indeed higher if one has had PHN, it is vital these patients be vaccinated.

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