Comparing health outcomes for hospitalized toxic megacolon patients in urban and rural healthcare facility setting: a nationwide study.

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Introduction:

Management of Toxic Megacolon (TM) remains a challenge for physicians and surgeons due to the potential systemic toxicity and complexity associated with the condition. Limited data demonstrating incidence and inpatient health outcomes is available for TM. Our aim is to assess and compare the health outcomes in hospitalized TM patients in rural and urban health centers.

Methods:

We queried the Premier Healthcare database for nationwide adult inpatient admissions between 2016-2018 with the following ICD10 diagnosis codes for TM: K59.3, K59.31 and K59.39. The study population was further classified into 2 groups based on healthcare facility setting: urban versus rural centers. We evaluated incidence of morbidity, readmissions, post-operative mortality (PM), and mean length of stay (MLOS) in each of the two groups. Unpaired t-test was used to compare outcomes among groups.

Results:

6609 inpatient admissions were identified, 5783 in the urban centers versus 826 in rural centers. Rural centers reported significantly lower morbidity than urban centers (Mean: 31.25% vs 41.36%; p=0.004). Similarly, MLOS was also significantly lower in rural centers (6.42 vs 7.99 days; p=0.006). Readmissions and PM were higher in the rural centers, but this was not statistically significant.

Table 1: Outcomes in urban and rural centers by admission type

VARIABLES	EMERGENCY	URGENT	ELECTIVE	P-VALUE
Total Encounters	4894	989	726	
Urban	4304	851	628	
Rural	590	138	98	
Readmissions	872 (17.8%)	148 (15.0%)	114 (15.8%)	
Urban	766 (17.8%)	130 (15.3%)	98 (15.6%)	0.44
Rural	106 (18.0%)	18 (13.0%)	17 (16.9%)	
Mortality	502 (10.2%)	122 (12.3%)	51 (7.0%)	
Urban	426 (9.9%)	107 (12.5%)	41 (6.5%)	0.19
Rural	76 (12.8%)	16 (11.5%)	10 (10.1%)	
Mean LOS	7.02	7.09	7.49	
Urban	7.56	8.30	8.10	0.006
Rural	6.49	5.88	6.88	
Morbidity	1812 (37.0%)	397 (40.1%)	311 (42.8%)	
Urban	1619 (37.6%)	355 (41.7%)	281 (44.7%)	0.004
Rural	193 (32.7%)	42 (30.4%)	30 (30.6%)	

Figure 1: Morbidity in urban and rural centers by admission type

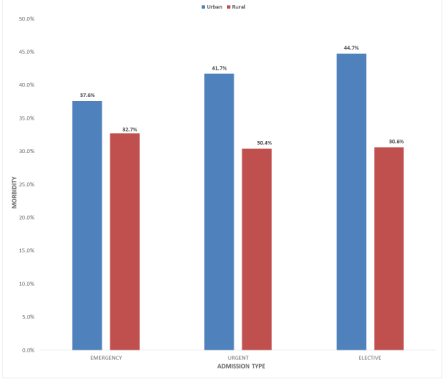
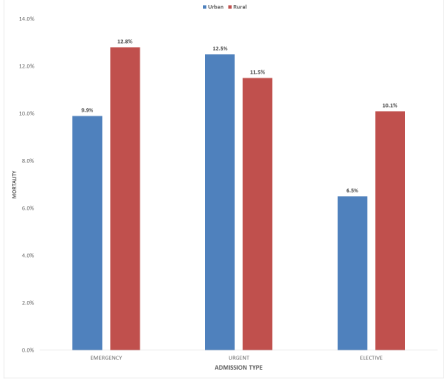


Figure 2: Mortality in urban and rural centers by admission type



Limitations:

- Database reliant upon ICD-10 coding, thus lacks past surgical history, comorbidities, and initial vital signs, physical examination, and labs
- Misclassification bias possible
- Unable to analyze surgeon/physician skillset, medical personnel and resource availability, patient preference, and protocols/treatment guidelines of the hospital facilities

Conclusion:

Toxic megacolon is associated with high morbidity, especially in urban centers. Further research is needed to assess various risk factors, interdisciplinary team coordination, and management strategies to optimize health outcomes in toxic megacolon patients.

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Disseminated Hemorrhagic Herpes Zoster in an Immunocompromised Host

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Introduction

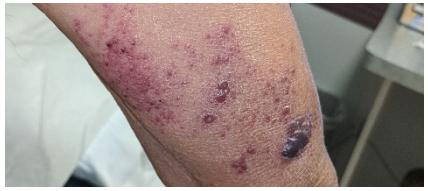
Herpes Zoster (HZ) is the reactivation of the Varicella-Zoster virus (VZV) within the dorsal root ganglion. It classically presents as an eruption of painful vesicular lesions in a dermatomal distribution along the skin surface. It is observed more commonly in the elderly and immunocompromised population. Disseminated hemorrhagic HZ can be seen in 10-40% of immunocompromised patients[1] and contrary to the typical presentation of HZ, vesicles are disseminated with no predilect to a particular dermatome. 2-5% of disseminated HZ are thought to be via hematogenous spread [2]. It's defining characteristic is >20 vesicles in a non-dermatomal pattern. Treatment with antivirals such as Acyclovir are standard of care.[3] Post-herpetic neuralgia can be a lingering sequela, and prompt recognition can help reduce morbidity.

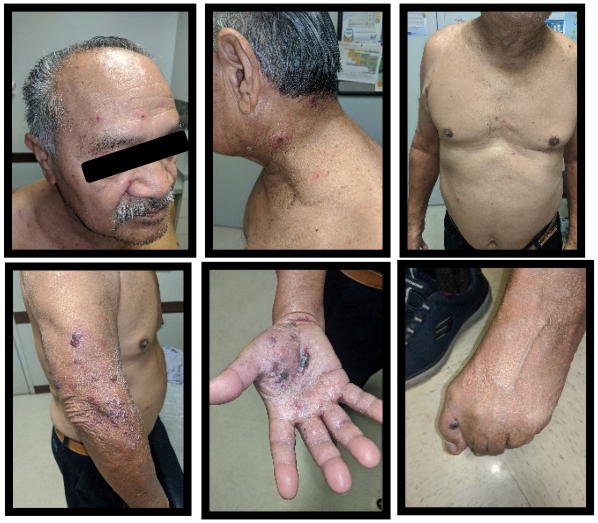
Case Summary

A 73-year-old male non-smoker with history of CLL, well-controlled diabetes mellitus type II, elevated PSA and remote history of Dengue Fever, who developed right forearm pain for several weeks. He reported 10/10 constant burning sensation that radiated from his right elbow to his right forearm and palm.

On a subsequent visit he also began experiencing paresthesia of right anterior shoulder, upper back and bilateral plantar surface of feet. At that time, HPI and physical exam findings including positive Tinel's, Phalen's sign, were consistent with likely bilateral carpal tunnel syndrome and bilateral plantar fasciitis. No rashes had been present at that time.

One week later, the patient now presented with worsening pain and multiple diffusely scattered grouped and single *hemorrhagic vesicles with bullae* ranging in size from approximately 1-5 mm found on scalp, face, torso, back, bilateral arms (including palmar surfaces of bilateral hands) and bilateral legs/feet including in between 4th and 5th digit on the right foot. Vesicles were tender to touch without induration.





Clinical Course

Week 1-4

- Prednisone 40 mg BID x 5 days and oral Valacyclovir 1g TID x 7 days --> *minimal improvement of swelling*
- Amitriptyline, lidocaine patch, Ketorolac, Gabapentin , Capsaicin --> *no changes*

Week 4-5

- Neuroprolotherapy --> *immediate decrease in pain*
- OMT (MFR, lymphatic drainage techniques)--> *decrease swelling, improved ROM*

Week 6

- Physical Therapy/Occupational Therapy: slightly improved grip strength
- Neurology evaluation: abnormal EMG, right foraminal stenosis C3/C4 and C4/5 abutting C5 nerve root, severe carpal tunnel syndrome (CTS) and ulnar nerve neuropathy
- Orthopedic evaluation: Carpal tunnel release

1 Year Follow-up

•The patient has resolved all lesions. His surgical scar is well-healed
•He has regained majority of his right hand function with physical and occupational therapy.
•He has started treatment for CLL with Bruton Tyrosine Kinase inhibitor
•He is also scheduled to get his shingles vaccination.

Discussion

HZ can be easily recognizable with history of a classic prodromal period of neuropathic type pain days prior to vesicular cutaneous rash in a dermatomal pattern. In this case report the patient had a prodrome of several weeks with widespread pain and non-dermatomal pattern which made diagnosis challenging. Diagnosis is solely based on clinical findings and we opted against diagnostic testing with PCR and/or viral cultures because it would not change our management and be an additional cost to the patient. Since the patient was unable to be seen until several days after the onset of lesions, it had already been more than 72 hours, which may have contributed to the minimal response of antiviral and steroid treatment in this case. The role of corticosteroids in HZ is controversial [4] but it was utilized in this instance to help with severe inflammation and pain in the hand. There was little to no literature on the effect of OMT and neuroprolotherapy for herpetic neuralgia and could be a topic for further research. This patient had significant inflammation of his right hand which most likely led to his carpal tunnel syndrome. Early diagnosis of HZ in the immune incompetent patient is important because in addition to pain and skin lesions, dissemination can occur and may also present with manifestations, which can change management. This is also another topic that can also be explored in the future.

Conclusion

Disseminated hemorrhagic HZ is a rare uncommon presentation of HZ that can be challenging to diagnose based on the atypical presentation as can be seen in this case report. Early diagnosis and treatment are the mainstay to reducing rare and possible life-threatening complications. As an outpatient physician, focus should be on prevention with vaccination to help reduces cases of complicated HZ.

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Dextrose Injections Into Dorsal Rami As Treatment For Chronic Xiphoidalgia

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Introduction

- Chronic pain is the leading cause of disability globally and costs the U.S. an estimated half a trillion dollars annually. Approximately 1 in 5 (20%) adults in the U.S. experience chronic pain and up to 17% of adults are affected by chronic neuropathic pain.
- In this case, we discuss a patient who presented to our outpatient clinic with 2 years of chronic xiphoidalgia. Despite evaluation by numerous specialists and multiple interventions, there was no clear etiology or long-lasting treatment.

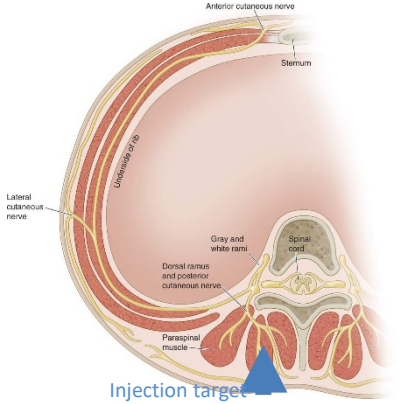
Neuroprolotherapy

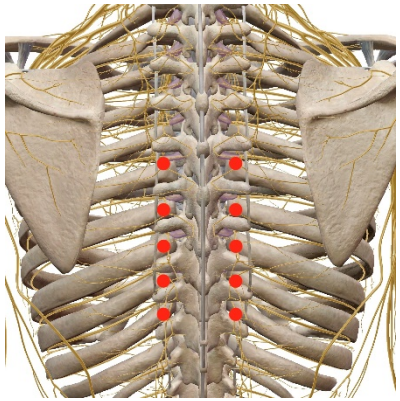
- Neuroprolotherapy is a relatively new, but growing, treatment modality for acute or chronic neuropathic pain. It is a low-risk subcutaneous injection therapy using dextrose solution targeting pathological superficial nerves as the source of pain.
- One proposed mechanism is that dextrose binds to TRPV1 capsaicin receptors located on superficial peripheral nerves. This activates a pathway that inhibits the release of substance P and Calcitonin Gene Related Peptide (CGRP) which are known to cause pain and swelling of nerves and surrounding tissue. This therapy can provide immediate analgesia for short term relief and can provide long term pain relief with serial injections. The dextrose solution is cost-effective and safe.

Case Description

Bibliography

- This 55-year-old female presented to the outpatient clinic with chronic xiphoid pain that had been present for greater than 2 years. The pain was described as sharp, constant, located primarily at her xiphoid process with radiating pain straight to her back, and wrapping around both sides. It was rated about 7/10 pain at rest. She denies any inciting trauma, but reports the pain began shortly after her second cervical fusion. She reported a history of GERD with esophagitis, two cervical fusions with anterior approach, and anxiety. She reports hx of bulging disks in the T3-4 region, but more recent MRI thoracic spine was interpreted as normal. MR chest did not identify any abnormal musculotendinous findings.
- On physical exam, she had significant guarding to the epigastric, subcostal, and xiphoid regions.
- She had previous evaluations by multiple specialists including gastroenterology, general surgery, neurosurgery, rheumatology, pain management, and physical therapy.
- She had multiple interventions including OMT, trigger point injections, and even a cholecystectomy. She previously received corticosteroid injections in our office to the xiphoid and surrounding areas. This gave her only 3-4 hours of relief of the xiphoid but didn't provide any relief to her back.





Management and Outcome

- The patient was then treated with serial injections (weekly) of 5% dextrose solution into the thoracic paraspinal regions of T3-T8 targeting the exiting nerve roots. A 27g ½" needle was used to inject 1cc of D5W 1cm lateral of the interspinous space for the affected levels. This was based on the patient's tenderness in the area, which correlated with the dermatomal distribution to the xiphoid. The patient reported immediate pain relief of back, sides, and xiphoid. The analgesic affect lasted for about 1 week. She returned weekly for 5 weeks. Her baseline pain level was assessed each time. By the 5th consecutive week of injections, her baseline pain had gone from 7/10 to a 4/10 on a standard pain scale.

PAIN SCALE		
WEEK	*BASELINE*	*AFTER NP*
1	7/10	0/10
2	7/10	1/10
3	4/10	2/10
4	5/10	3/10
5	4/10	1/10

Discussion

- This case proposes evidence for two things:
- First, injection of dextrose solution into superficial nerves can be a means of temporary, but immediate, analgesia.
- Second, serial dextrose injections done in consecutive days/weeks may provide improvement in baseline pain. This therapy is safe and potentially a cost-effective option that may provide an alternative therapy modality for patients suffering from chronic pain.

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Sugar Water For Shingles?

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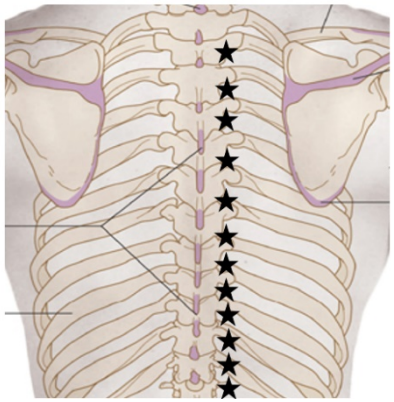
Introduction

Neural prolotherapy is used to alleviate neuropathy by targeting superficial nerves. However, its application has not been applied to patients with acute herpes zoster infection. Due to the relatively poor analgesic effect of modern medications this experimental case study was performed to determine the usefulness of neural prolotherapy in acute herpes zoster infection.

Neural Prolotherapy MOA

Dextrose activates TRPV1 on capsaicin receptors located on peripheral nerves. A chain of reactions leads to the displacement of neurogenic irritants including CRGP and substance P resulting in decreased pain.

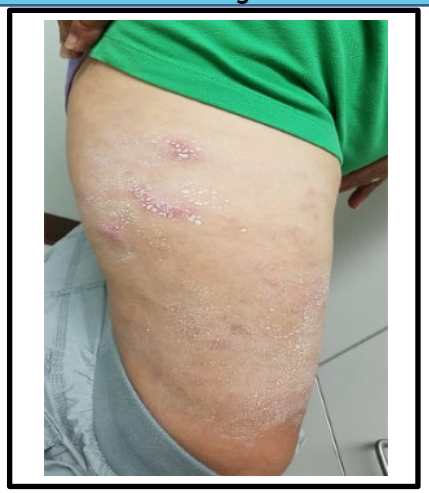
Injectate Target



Case Presentation

61 year old female presented with chief complaint of burning right thigh pain with overlying rash. The rash (displayed below) appeared 6 days prior on right buttocks and spread down the lateral aspect of her right thigh stopping prior to her knee. The pain was described as burning and intensified from a 6/10 to 10/10. She was diagnosed with acute herpes zoster and given 30mg toradol injection in office and prescribed 7 day course of valacyclovir 1g BID and gabapentin 100mg TID. Patient was seen in follow up day 6 of valacyclovir with improvement in rash but still in 10/10 burning pain along lateral aspect of right thigh unrelieved by gabapentin 100mg TID.

Presenting Rash



Management and Outcome

1ml of Dextrose 5% in water was injected into the right dorsal nerve root of L1, L2, L3 based on the dermal distribution of the rash using a 27 g ½" needle without complication. Pt was re-evaluated 5 minutes after injection and rated pain at 4/10.

Outlook

Neural prolotherapy serves a potential role in the acute management of herpes zoster pain control. Further studies need to be conducted to support the safety and efficacy of this modality specifically in acute zoster infections and possibly post herpetic neuralgia. A wider study needs to be completed to look at the effect of not only acute pain management but serial neural prolotherapy injections weekly to eradicate pain potentially completely.

A Chronic Breast Rash

Optional - Sponsor Logo

Daniel Junco, DO
Edward A. Jackson, MD
Kamini Geer, MD

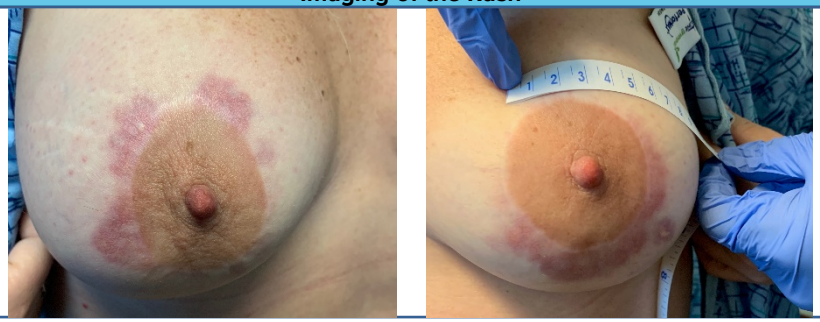
Introduction

In Family Medicine, the diagnosis of a rash is often based on common presentations, patient history, and pattern recognition. But often, physicians find it difficult to diagnose a rash correctly because many rashes nay present in a similar fashion. At times the best way to diagnois a rash is with a skin biopsy when the clinical picture or history do not lead to a diagnosis.

Case Presentation

A 49-year-old female presents for her annual well woman exam. She reports a rash around her bilateral areola that started several years after her breast augmentation. She denies itching, pain, breast mass or discharge. She reports past imaging studies have confirmed the integrity of her saline implants and prior annual screening mammograms are normal.
Past medical history includes uncontrolled Type II Diabetes (last A1C 8.2%) treated with several oral medications.
Her exam is normal except for a rash consisting of violaceous circular lesions coalescing into plaques that border the breast augmentation scar.
Upon discussion and informed consent, the patient consented to a punch biopsy to confirm diagnosis.

Imaging of the Rash



Differential Diagnosis

• Lichen Planus • Paget's Disease of the Breast • Tinea Corporis • Hypertrophic Scarring

Punch Biopsy Results

Microscopic: Sections of skin showing: interstitial infiltrate of lymphocytes and histiocytes surrounding zones of mucinous necrobiosis of collagen.
Diagnosis: CONSISTENT WITH GRANULOMA ANNULARE

Clinical Discussion

Granuloma annulare (GA) is usually a self-limited disorder that presents as non-scaly, red, annular plaques, most often on the extremities. The cause is unknown. GA is more common in women than men, without predilection for race, ethnicity or geographical areas. Localized GA is most common with red to purple lesions up to 5 cm diameter, located on the extremities, usually the ankles, feet or lower limb and the wrist area. Generalized GA is most common in adults, yellow to violaceous lesion involving the trunk, extremities, scalp, palms and feet (1).
GA has been associated with diabetes (predominately Type 1), but the link is tenuous due to conflicting studies. (2,3)
Additionally, GA has been linked to malignancies such as Non-Hodgkin lymphoma, and leukemias, but recent studies have found no definitive relationship. (4)
Treatment for GA depends on the patient desires, as there is often spontaneous resolution. GA is typically asymptomatic, and treatment is often performed for cosmetic reasons. The challenge for the clinician is the lack of randomized controlled trials evaluating the efficacy of different treatment modalities. (5)
First line therapies include topical corticosteroids, topical tacrolimus, imiquimod cream, intralesional injections onto the elevated border with 2.5 to 5 mg/ml triamcinolone acetonide, or destructive methods such as cryosurgery or pulsed dye laser therapy. This case is unusual in the way it presented itself, with the lesions involving the skin surrounding her breast augmentation scar.

Case Outcome

The patient was started on triamcinolone acetonide 0.1% topical cream, to apply it only to affected areas twice a day. There was no improvement noted with the topical steroid noted at follow up. Pt agreed at that time to begin treatment with topical tacrolimus. She would return in 4 weeks for reevaluation of the rash.

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Epidural Hematomas in Newborns
A Case Study

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Background

Epidural hematomas occur between the inner surface of the skull and the outer dura layer. In newborns, they are considered to be rare and are often associated with skull fractures and cephalohematomas. They are most commonly seen in babies born to nulliparous, prima gravida mothers, with long labors that require instruments.
Bleeding can be venous or arterial, but venous bleeds are more common in newborns, while in adults, an arterial bleed is more common. An MRI or CT brain is considered the gold standard for diagnosis as opposed to an US as it is not as accurate with regards to the size and thickness of a hematoma.
The approach to treatment ranges from watchful waiting in asymptomatic patients with hematoma <1cm to needle aspiration to evacuation with a craniotomy. There is very limited evidence that any of these options have better outcomes. Overall the prognosis is good, and most patients do not develop severe neurological sequalae.

Extradural Hemorrhage

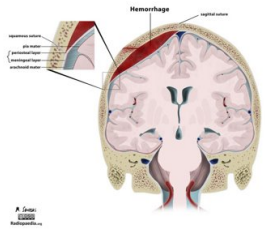

Fig 1. Extradural hemorrhage.

Introduction

Epidural hematomas are often seen after a great deal of trauma, which is often not associated with newborns. However, because it is rarely on the differential, this can lead to being underdiagnosed. This case study focuses on one such example of a baby presenting with large cephalohematomas.

Case History

Three-day old female presented to clinic with mother for newborn visit. Mother did not bring any records of prenatal care or birth and very limited history was obtained; does report that labor was complicated with a motor vehicle accident, and that vaginal delivery was attempted with assistive devices. Ultimately reports that baby was born at 39 weeks via cesarean section.
On exam, baby was noted to have 2 large cephalohematomas on right and left parietal regions, slightly jaundiced but no scleral icterus noted, and neurological exam was unremarkable.
Baby returned for follow up two days later with paternal grandmother, who reports that baby had to undergo phototherapy after birth due to hyperbilirubinemia. Reports baby is feeding well, admits to some minimal spit up, but denies any projectile or excessive vomiting. Also reports baby is voiding and stooling appropriately for age.
Exam was unchanged, and baby did not seem bothered when cephalohematomas are palpated.
Given the large size of the cephalohematomas, and very limited history, X-Ray skull was ordered to rule out fracture and bilirubin levels were also ordered given history of phototherapy.

Results

XR skull showed bilateral parietal skull fractures. Family was immediately contacted, imaging results were discussed, and it recommended to go to ED for further imaging with CT head to rule out bleed. CT head was then completed which showed an epidural hematoma on the right causing compression of right cerebral hemisphere with leftward midline shift and right uncal herniation, recommending emergent neurosurgical consultation.

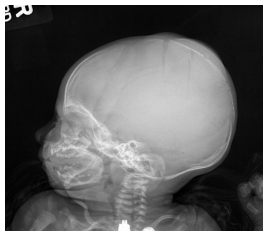

Fig 2. XR skull with parietal skull fractures

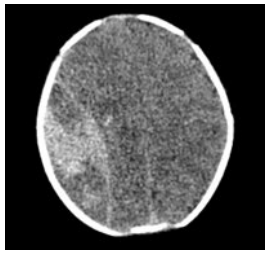

Fig 3. CT head with large epidural hematoma

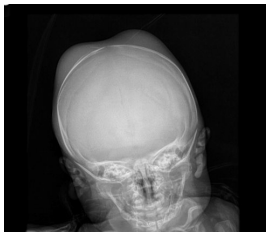

Fig 4. XR skull with cephalohematomas

Treatment

Patient then underwent an emergency craniotomy with evacuation of a subgaleal and epidural hematoma with neurosurgery.
Patient had a stable post-op course, neuro exam remained within normal limits during hospital stay and no hypotonia was noted.

Discussion

There is very limited literature on epidural hematomas in newborns, as it is a rare occurrence, but that could be due to being underdiagnosed. In most cases, no surgical intervention is required and the overall prognosis is fairly good, which could also be a reason it is underdiagnosed. It is important to keep epidural hematomas on the differential, even when neurological examination is benign in cases of prolonged labor with difficult deliveries, especially when assistive devices are used. In our case, this was most likely the cause of the bleed. However, nonaccidental trauma must also remain on the differential in any infant presenting with head trauma and must be ruled out.

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