An Unusual Case Involving Morphine Sulfate

A Case Report

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Introduction

A 33 year old white female with no significant past medical history and no known allergies was admitted to the surgical intensive care unit after undergoing an elective abortion, secondary to severe fetal anomalies, and a transcervical hysterectomy. The patient had a previous medical history of spontaneous abortions, and two dilation and curettage procedures. Patient was receiving morphine sulfate for post-operative pain management.

When seen in SICU, the patient was awake, oriented, and in no distress, sitting up in the bed, conversing with a family member. Vital signs were stable, and physical examination was unremarkable. Patient was admitted to SICU for observation due to earlier bleeding in the operating room resulting in a low hemoglobin and a hematocrit of 8.2mgs/23.5%.

During a routine administration of morphine, the patient was accidentally injected with three milligrams of morphine sulfate via an arterial line in the left radial artery. Within two minutes, the patient began experiencing severe pain, and swelling distally to the mid forearm, associated with an urticaric erythematous rash on the forearm and acrocyanosis of all five digits distal to the injection site.

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Management

On physical examination, the patient appeared in moderate to severe distress secondary to pain. The patient was unable to flex her hand or fingers due to the severe fusiform swelling. Vital signs remained stable except for a minimal tachycardia of 96. Blood pressure remained normal at 135/84. At no time did the patient become hypotensive. The left extremity appeared as described above with gradual aggravation of the swelling, discoloration and pain. Capillary refill was slightly delayed at 2 seconds, and the hand remained in a semi-flexed position with compromised range of motion.

Immediately, 50 milligrams of diphenhydramine was administered intravenously due to the anaphalactoid type reaction that was occurring. This is the known histaminic release seen after administration of morphine sulfate. Emergent consultation with the pain management service, available at Beth Israel Medical Center for possible "antidotal" form of treatment and quick reversal, resulted in the following: treatment with an intravenous corticosteroid for its anti-inflammatory effect (methylprednisolone 250 milligrams) and lidocaine 50 milligrams intra-arterially at the same site for the anesthetizing effect in the vessel, thereby reducing further spasms and pain.

Fearing further vascular compromise and compartment syndrome, discussion of the case prompted further consultation with the Poison Control Center in New York City. Upon reviewing the case a suggestion was made based on a case by Hardy and Agostini who reported treating their patient with Phentolamine, an alpha-receptor

blocker, hoping to dilate the vessels of a digit that had an accidental injection of epinephrine during a digital block. In their case, one milligram of Phentolamine was mixed with 3cc of lidocaine 1%, and injected peripherally similarly to a digital block. Resolution of symptoms was seen in approximately fifteen minutes. In our case, discussion considered using three times the dose of both phentolamine and lidocaine as a radial nerve block, since all five digits were involved, but only if there was no observed improvement with the previously administered treatment.

Approximately ten to fifteen minutes after the above intervention was administered, the patient admitted feeling less pain but still could not flex her digits due to swelling. The erythematous rash appeared to have improved, and there was diminution of the distal digital acrocyanosis.

Discussion

After reassessing the patient, it appeared that clinically and physically the patient felt better. The swelling, pain, acrocyanosis, and range of motion had improved. No further treatment except for warm compresses to improve peripheral circulation by vasodilatation and to improve perfusion was administered. After several hours of continuous observation and monitoring, the episode was completely resolved with no residual consequences.

Morphine sulfate is an alkaloid of opium, and is a phenanthrene derivative. It exerts its primary effects on the central nervous system and organs containing smooth muscle. Pharmacological effects include analgesia, drowsiness, alteration of mood, hypothermia at low doses, and respiratory depression that is dose related, as well as reduction in peripheral resistance with little or no effect on the cardiac index and miosis. Morphine sulfate acts as an agonist on the mu receptors that are located throughout the body, mainly in the central nervous system and other tissues. Although it does not affect the autonomic reflexes, it exerts spasmogenic effects on the gastrointestinal tract, resulting in decreased peristaltic activity.

Histamine release is common, with the development of wheals and local tissue irritation. Allergic manifestations of urticaria, and rarely, anaphylaxis may occur. Seizures may result from high doses, as well as smooth muscle hypertonicity resulting in biliary colic. Difficulty in urinating and retention might also occur. An additional serious side effect is respiratory depression due to delayed CNS penetration.

While low doses of intravenously administered morphine have little effect on cardiovascular stability, high doses are excitatory, resulting in sympathetic hyperactivity and increase in circulating catecholamines.

The outcome in this case was favorable but the potential catastrophic results, including a compartment syndrome, fibrosis, nerve destruction, dry gangrene and the most feared outcome of necrosis leading to amputation of either part of the digits or the whole hand, did exist.

Naloxone, being a narcotic antagonist and known to reverse many side effects - principally those of respiratory depression - may have had a positive effect. However, any reversal effect of its administration after the histamine and catecholamines have been released is unknown.

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Use of Noninvasive Positive Pressure Ventilation in Acute Respiratory Failure

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For more than 50 years, mechanical support of patient's respiration has been mainly achieved by the use of intermittent positive pressure ventilation (IPPV) through a cuffed endotracheal or tracheostomy tube. In this time, there have been important advances and improvements to these machines - such as the development of positive end expiratory pressure (PEEP) and pressure support ventilation (PSV). These advances have had a significant positive impact on the management of patients with acute respiratory failure.

For the past 10 years, there has been increased interest in the use of noninvasive methods of ventilation for the management of acute and long-term ventilatory insufficiency. This is due, in part, to increased recognition of the high rate of complications specially related to intubation.

The first machines developed for use in patients with respiratory failure delivered continuous positive airway pressure (CPAP). With CPAP, a single pressure that is greater than atmospheric is applied to the patient's airway throughout the inspiratory and expiratory cycles of respiration. There are multiple reasons why CPAP improves breathing.

1. Counteracts intrinsic PEEP
2. Decreases preload and afterload in congestive heart failure (CHF)
3. Improves lung compliance in CHF
4. Decreases the work of breathing

Intrinsic PEEP is the concept, that in patients with severe chronic obstructive pulmonary disease (COPD) or asthma, the lung does not fully empty due to the obstruction of the airway resulting in a positive pressure in the airways at the end of expiration. Therefore, to breathe in, the COPDer must first overcome this positive airway pressure before he can generate a negative pressure to inhale more air. This is called intrinsic PEEP and, in patients with respiratory failure due to COPD, it is often about $5cmH_20$. But it can be higher.

NIPPV also applies positive pressure to the airway. The mode of ventilation most commonly used is bilevel positive airway pressure (BiPAP). This involves the delivery of two different pressures: an inspiratory positive airway pressure (IPAP) and an expiratory positive airway pressure (EPAP), which is lower than the IPAP. The machine senses the change in flow as the patient begins to inhale and will cycle up to the preset IPAP. This pressure is maintained until the machine senses a decrease in inspiratory flow as the patient reaches maximum inhalation. It then cycles down to the EPAP and maintains that pressure until the patient again begins to initiate a breath, when it again cycles up to the IPAP.

This mode of ventilation requires that the patient breathe spontaneously; it is the initiation of the inspiration that triggers the machine to cycle up to the IPAP.

In patients with respiratory failure, a common technique is to begin with the expiratory level at 5 and the inspiratory level at 15. The levels are adjusted based on patient comfort, tidal volume achieved and blood gases.

Other ventilators and mode of ventilation have also been used with a nose or facemask. These ventilators are set as they would be for an intubated patient using common modes of ventilation such as assist-control

There are now multiple randomized, prospective studies showing the benefit of noninvasive ventilation in respiratory failure (1-3).

Furthermore, not only has it been shown to be an effective therapy, but there is also evidence that it contributes to less time in hospital, fewer complications and decreased mortality compared to immediate intubation and ventilation. Antonelli et al (4) showed in their study that there is a reduction of intubation from 74% to 16%, major complications were decreased from 48% to 16% and length of stay from 35 days to 23 days. Brochard et al (3) showed in their series that the mortality decreased from 29% to 9%. It should be noted that only 1/3 of the patients could be randomized and only between 50-80% of patients are compliant with treatment. Still there is certainly Level 1 evidence to support the use of BiPAP in patients with a $PCO_2 > 50$, a pH < 7.35, and a respiratory rate > 30.

There is also evidence from randomized, controlled trials to show that CPAP improves oxygenation, hypercapnia and reduces the rate of endotracheal intubation in pulmonary edema (5-7). If tolerated, BiPAP seems even more effective with faster reduction of PCO_2, improved PO_2, pH and RR. Unfortunately, there were an increased number of myocardial infarctions in the patients on BiPAP compared to CPAP. Until further studies are done, it is recommended that CPAP be tried first, and if BiPAP is attempted, it should be initiated cautiously, watching for hypotension (8).

There is still controversy on how and why CPAP works in CHF. There is no dispute that it reduces the work of breathing by improving atelectasis and V/Q ratios. Some studies have suggested it also improved preload and afterload and that there is actually an improvement in cardiac index. Of even more interest, Bradley et al suggest that up to 50% of patients with CHF have sleep apnea. In these patients, the use of CPAP not only improves sleep, but also leads to improvement in ejection fraction that lasts into the daytime hours when they are awake. It is postulated that CPAP reduces preload and also afterload. It is possible that obstructive sleep apneas can put a severe strain on the heart by markedly increasing afterload and leading to hypertension.

In conclusion, for those patients who present to the emergency department with acute respiratory failure but with normal levels of consciousness, no major secretion problems and who are hemodynamically stable, a trial of BiPAP or CPAP should be attempted prior to considering intubation and mechanical ventilation.

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Reduction of the Separated Shoulder: A Primer for Emergency Physicians

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Abstract

The reduction of a separated shoulder is a skill that all emergency physicians should develop. Many techniques are available that are safe and effective. This article reviews the approach and procedures that have been most successful in the author's practice.

Introduction

In Israel, emergency medicine in the past was compartmentalized. Only orthopedists reduced shoulder separations. In 1998, emergency medicine was approved as a specialty in this country (1) and now many physicians, who are not orthopedists, will be expected to reduce dislocated shoulders. This article reviews the approach to this very common problem.

Anterior shoulder dislocation is the most common dislocation (2). It is the dislocation in the largest joint that emergency physicians are expected to treat themselves (other dislocations are a lot less common and are beyond the scope of this article). The fact that this joint is so loose - it allows flexion, extension, abduction, adduction and circumflexion to occur - makes dislocation so common. It is commonly recurrent and is most frequently seen in athletes in falls on an outstretched arm. While often patients tell you that they know their shoulder is dislocated and occasionally one can feel the empty socket, a radiograph is still recommended as often fractures may accompany the dislocation. Physical examination should test sensation over the lateral aspect of the shoulder and motor function, the patient attempting abduction and feeling the deltoid contract (2).

Once dislocation is identified, reduction should proceed as soon as possible. The longer a joint is out, the more difficult it will be to reduce. Within twenty four hours changes in the joint are evident. These may prevent relocation (personal communication, Dr. R. P.).

It is agreed that control of pain and spasm are the keys to reducing any dislocation. However, there are some techniques that can be used without any sedation at all. We will begin with these and then we will review principles of pain and spasm control before proceeding to techniques that require sedation.

The Hennepin Technique

This is the author's favorite technique and it usually works within minutes without any sedation. The patient sits opposite the physician and rests his elbow on the surface of a table. Without touching the patient, the patient is asked to sit with the elbow flexed at 90 degree from the shoulder and the humerus should rest flat on the table. The physician then holds the patient's hand as in arm wrestling. That is, he clutches the

palm of the hand of the patient with his own hand. The elbow is flexed at 90 degrees with the humerus, the latter flat on the table. Then very slowly and pausing when the patient feels pain, he attempts to pin the patient's arm, that is to adduct it until it rests on the table. If the patient remains sitting in the usual position and does not lean with the doctor, then reduction usually occurs in this position as the humeral head is disengaged from under the glenoid. See **figures 1, 2**.

figure 1

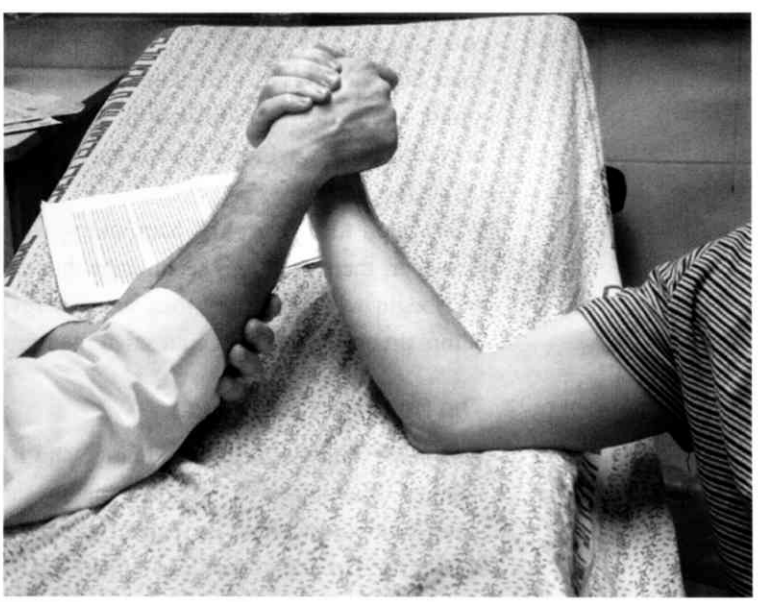

figure 2

The Stimson Technique

This technique is the easiest for the physician but it takes a while. The patient lies prone with the arm over the side of the gurney. Weights or sandbags are tied to the hand at the wrist but must not rest on the floor. The theory is that this will exhaust the muscles and end the spasm thus leading to reduction. In truth this takes a while but it can often be hastened when combined with scapular manipulation (see below) or with sedation (see below).

The Scapular Manipulation Technique

This technique is unique for two reasons. Firstly, instead of trying to manipulate the humerus up into position, the scapula is manipulated downward to meet the humerus. Another innovation is that it was discovered and first described by an emergency physician (3), and initially published in the Annals of Emergency Medicine. Thus it is unlikely that your orthopedists know of this technique. The author has had much success with this but it requires some degree of physical strength and requires some traction on the arm at the same time, either by pulling on the arm or by attaching weights as with the Stimson technique. Sedation is not generally necessary, but it may help. The technique involves having the patient lie prone. The scapular tip, that is the point of the triangle, is identified and is pushed medially, forcing the glenoid downward to meet the humeral head. See **figure 3**.

Sedation

Sedation requires both an analgesic and a muscle relaxant. Both should be short acting and reversible, if possible. The author has had much success with aliquots of 2mg of midazolam (Dormicum) and 2 mg of morphine. The author gives both together until some degree of sedation is obtained. This is cautious, short acting and reversible, but the synergy between the two medications may cause oversedation. It is for this reason

figure 3

figure 4

figure 5

figure 6

that some prefer ketamine (Ketalar) 2mg/kg IV plus a small amount of midazolam but this is, of course, irreversible until it wears off. It is safe and usually lasts for 20 minutes. Fentanyl is a short acting analgesic that can take the place of morphine. It is less available, expensive and is expressed as micrograms per kilogram, which the author has always found cumbersome. Propofol and methohexital can give deep sedation and wear off quickly but the former can cause sudden apnea and the latter, in my opinion, requires experience in handling barbiturates. Neither has analgesic effects. There are techniques (5) described in the literature using lidocaine anesthesia injected into the joint but these techniques are cumbersome and require some degree of skill. They are beyond the scope of this article. Basically, adequate analgesia and muscle relaxation is crucial if initial attempts to return a dislocated shoulder are unsuccessful.

Traction-Countertraction Method

This technique is safe but it requires an assistant, some sedation and some degree of strength. The two methods that are most commonly used are as follows. A sheet is inserted under the affected shoulder and an assistant stands on the other side of the body pulling both ends of the sheet caudally. The physician applies traction to the arm. Alternatively, a sheet is tied around the patient. It is put under both arms and pulled from behind by an assistant. Another sheet is tied around the physician and the patient flexes his arm at the elbow and inserts it in between the physician's abdomen and the sheet. As the patient is pulled from behind by the assistant, the physician walks backwards. In both these techniques patience and ample sedation are necessary. See **figure 4**.

The Milch Technique

The author has less experience with this technique, but it is supposed to be safe and easy to perform. The patient attempts to lift his arm until it is overhead. At that point, rotation and traction are applied and as the head of the humerus pulls out from under the glenoid rim, it reduces. See **figure 5, 6**.

Techniques to Avoid

The old fashioned Hippocratic technique, which was the insertion of a foot into the axilla with traction on the arm and the Kocher technique - leverage, adduction and internal rotation - are dangerous. There is a high incidence of brachial plexus injuries and fractures of the humeral head. It is best to realize that there are some shoulders that you just can't reduce and these are best treated in the operating theater under general anesthesia.

After Reduction

Often, but not always, the physician will feel the shoulder relocate, or the patient will know. In any case, a post reduction x-ray is necessary to rule out a fracture (the Hill Sachs Lesion, which results from impingement of the humeral head against the socket). Afterwards, the shoulder is immobilized. Current thought is that six weeks of immobilization is necessary.

Conclusion

Shoulder reduction is a technique with which all physicians practicing emergency medicine should be familiar. One should master at least two techniques so as to have a back up if one is unsuccessful. One should also be well versed in sedation. The author's own personal experience is, that in ten years, he was unsuccessful in the reduction of only two separated shoulders, both of which were taken to the operating suite for reduction. The use of these techniques should yield similar results for the reader.

Congenital Absence of the Posterior Arch of the Atlas, Associated with a Non-displaced Fracture of C2

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Abstract

Isolated absence of the posterior arch of the atlas with or without an intact posterior tubercle is generally considered a benign anomaly. Recognition of this defect as a benign variant is important in evaluating patients with cervical spine trauma. Neurologic symptoms may result from impingement of an intact tubercle during neck motion; however, this patient had an intact tubercle and no neurological symptoms. This anomaly may also be associated with atlanto-axial instability.

Introduction

Developmental anomalies of the upper cervical spine and foramen magnum are not rare occurrences; partial or total congenital absence of the posterior arch of the atlas has been well documented in the literature (1,3-9,11-13).

Since such anomalies may be mistaken for fractures in patients who have sustained cervical spine injuries, recognition of this benign variant is clinically important in order to avoid further therapeutic and diagnostic maneuvers to treat this finding.

Case Report

A 22-year-old woman was brought into the emergency department after sustaining a decelerating type neck injury to the cervical spine in a motor vehicle accident. On initial examination in the emergency department, the patient complained of neck and back pain. Physical examination, including a neurological evaluation was normal. Cervical spine radiographs revealed a non-displaced fracture of the body of the second cervical vertebra and absence of the posterior arch of the atlas with ossification in the region of the posterior tubercle (**Figure 1**). The latter was confirmed by computerized tomography which also confirmed the lateral portions of the atlas not being visualized revealing that the posterior tubercle was intact. As a result of the C2 fracture patient was admitted to the hospital and placed in a halo jacket.

Discussion

Normal developmental anatomy of the cervical spine has been well defined by Epstein (2), and Rothman and Simone (10).

Each vertebral segment develops from three paired chondrification centers, two for the vertebral body, two for the costal elements, and one for each side of the neural arch. As normal development proceeds, the outgrowth from each neural arch center becomes the

pedicle, superior and inferior articular processes, transverse process, lamina, and spine. Because of this complex sequence of development it is not uncommon for a variety of anomalies to occur (**Figure 2**).

Review of the Literature

Numerous examples of total or partial absence of the posterior arches of the atlas are well documented. (1, 3-9,11-12). Most of these anomalies were discovered as incidental findings when radiographs were obtained on trauma patients, or for non-specific neck pain. In all cases, including this patient, the defect was best seen in the lateral projection.

Of the reported cases, only two patients had a neurologic deficit and one had atlanto-Axial instability. In the case reported by Richardson (9), a fifteen year old male who presented with intermittent quadroparesis from impingement of the posterior tubercle on the spinal cord, the authors postulated that impingement was caused by the

***Figure 1**: Cross table lateral projection of C-Spine. Ossicle in the posterior aspect of C-1, and non displace fracture of C-2.*

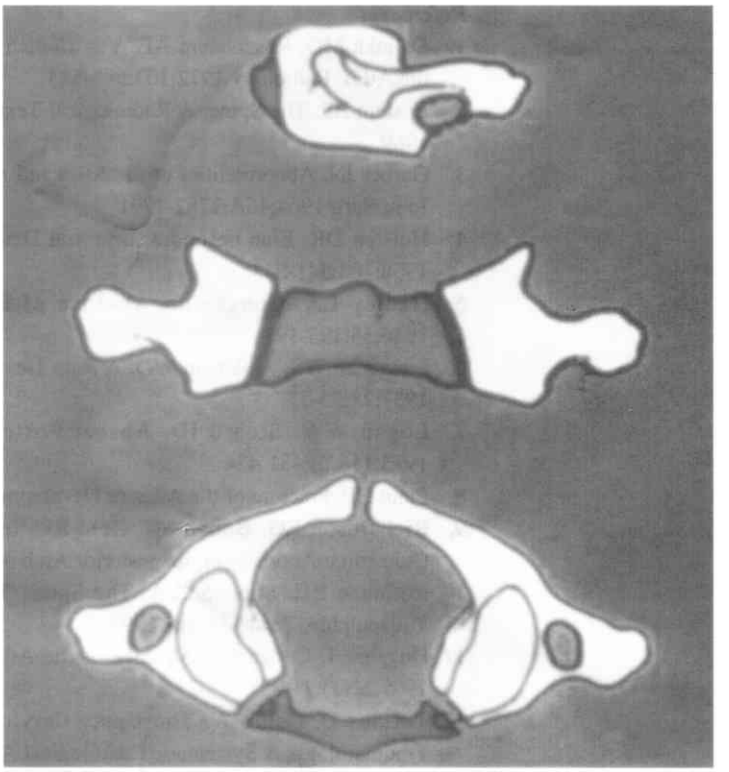

***Figure 2**: The outgrowth from each neural arch center becomes the pedicle, superior and inferior articular processes, transverse process, lamina, and spine.*

mobility of the posterior tubercle remnant in the spinal cord when the patient extended his neck. Excision of the tubercle led to full recovery.

The second case of neurologic abnormality associated with this anomaly was described by Holsten (4). A twenty-five year old athlete injured his neck while swimming. Radiographic examination demonstrated absence of the posterior arch of the atlas with an intact posterior tubercle. The patient was treated with long term cervical traction and went on to an uneventful recovery. Torklus and Gehle (12) reported on a case with atlanto-axial instability, and no neurological deficit or symptoms.

Plaut (8) quoted the work of Geipel who examined this anomaly by autopsy findings. He found bands of fibrous tissue bridging the gap. Logan and Stuard (7) confirmed this finding on their post mortum investigations. They were able to show that a fibrous band connecting the intact posterior tubercle replaced the posterior arch.

Conclusion

Isolated absence of the posterior arch of the atlas with or without an intact posterior tubercle is generally considered a benign anomaly. Recognition of this defect as a benign variant is important in the evaluation of patients with cervical spine trauma. Neurologic symptoms may occur due to impingement of an intact tubercle during normal neck motion. Of interest is that our patient had an intact tubercle and no neurological symptoms. This anomaly may also be associated with atlanto-axial instability.

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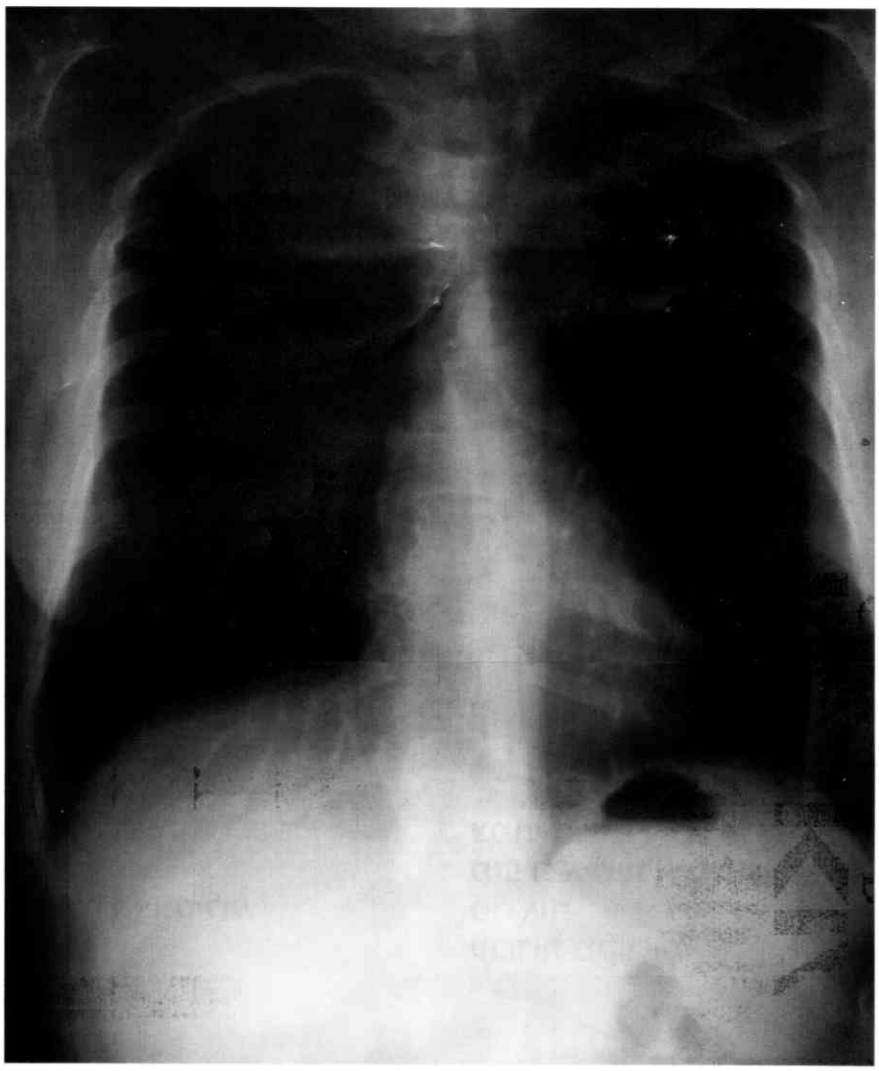
X-Ray

A 58 year old Yeminite woman comes to the Emergency Department with hoarseness, shortness of breath, cough and dizziness. She fainted once. She has no medical history, and is taking no medications. On physical exam she is nontoxic appearing, but with dry mucus membranes. Of note is that she is wearing a wig, although she is not married (many married Jewish women wear wigs) Her temperature is 38.5, BP is normal, pulse 120. Physical exam is unremarkable. WBC is 3.5.
What do you see on her x-ray?



Answer:
Chest film demonstrates a large mass in the ares underneath the manubrium with some deviation of the trachea. It is a classic example of the four terrible T of the thorax. They are thymoma, teratoma, substernal thyroid, and terrible lymphoma. This woman is wearing a wig because she was an immigrant from Yemen. In 1949, when most of these immigrants came, they were subjected to radiation treatments to sanitize them. At that time it was know that radiation killed micro organisms, but it's effects on health were less known. Her hair fell out. Her x ray demonstrates what was later to be determined to be a thymoma.

Publication bias

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Doctor Kildare leaned back in the chair in the nurse's station. Family medicine in this small town in West Texas had its moments of satisfaction, but Mr. Clinton's end stage colon cancer was not one of them. Notes were difficult to write in his chart; science could do little to help him. With the exception of TPN by the family's request, it was palliative care. Dr. Kildare quietly renewed the orders for TPN and went on to the next patient.

The head nurse caught him in the hallway. " Dr. Kildare, the pharmacy just called; a terrible mistake has occurred" This was not going to be Dr. Kildare's morning. " The TPN you ordered yesterday was mixed up with a bag of milk and by mistake..." the nurse paused and gasped, before raising her voice - "Mr. Clinton received a treatment of intravenous milk!"

Dr. Kildare wistfully thought for a moment- there isn't much that can be done about it. He walked away silently and continued his rounds. Later in the day, a call comes through to him at his office. "Dr Kildare? This is Dr. Welby. I checked Mr. Clinton this afternoon, and something funny seems to be going on. His ascites has suddenly come down, his jaundice is gone and he is sitting up in bed". Dr. Kildare paused - could it be? Days later, Mr. Clinton was discharged, without any signs of his cancer. Dr. Kildare called Dr. Welby back. "Dr. Welby - I know you are an up to date oncologist, but could it be possible...?"

Three months later 13 patients with various cancers were treated with the same intravenous regimen and miraculously the cancers disappeared. Dr. Welby and Dr. Kildare met in the hospital cafeteria. "Look" said Dr. Welby "We're going to have to let the secret out" Dr. Kildare protested "but neither of us has ever published a paper before, and besides, who will believe us?" Dr. Welby remained adamant. Pretty soon, a letter appears addressed to Dr. Kildare of Loving County Medical Center, Mentone, West Texas from the nearest medical library in Odessa Texas.

"Dear Dr Kildare;
Enclosed are the instructions for authors from the journals you requested"
Dr. Kildare examined the papers. He understood the part about double spacing. That was about it. What does sensitivity have to do with writing papers? Isn't sensitivity what you show your patients? Aren't P values something to do with urology?

In a busy high rise in downtown Dallas Texas, a secretary opens a letter from West Texas. "Intravenous Milk Cures Cancer" announced the title boldly. Rolling her eyes, she pushes the "reject letter" on her computer. "Dear Dr. Kildare; Thank you very much for your interest in our journal. After careful consideration, we can not publish your article. We wish you luck in all your future endeavors"

Dr. Kildare excitedly sees a letter in his mailbox. After opening it and reading its contents, his heart sunk. He really could not explain why it mattered so much, but it hurt his sense of pride, after all he did put his heart into it. I know, he thought, I'll call and find out what went wrong" Before he could call, the phone rang. "Kildare - it's Welby. This stuff is amazing. An end stage pancreatic tumor just walked out of the hospital alive. And no none has died since we started using this stuff" Dr. Kildare told him the bad news. Dr. Kildare then called Dallas.
"Hello"

"Hello, This is Dr. Kildare from Mentone, West Texas"

"...You have reached the American Association of Physicians. For information on membership, press one, for subscription services press two... for general information press 15, for hospital resource information press 16, for…

Dr. Kildare pressed 15

"For general information concerning membership press one, for general information concerning subscriptions, press two... for general information concerning general information press 15, for general information concerning hospital resources…

Dr. Kildare pressed 0. "You will now be transferred to an attendant"

Dr Kildare sighed in relief.

"There is no attendant available to take your call. For a message marked urgent, press one, to replay your message, press two, to change your message..."

This is not going to work, thought Dr. Kildare. He hung up. Still, it was worth one more effort.

In the big town of Lubbock Texas, a letter arrives to the chief of medicine at Texas Tech University. While not known for his ability to smile, this letter causes him to. But he is a reasonable man, always has been. He will write back.

"Dear Dr. Kildare. We received your article about intravenous milk for the treatment of carcinoma. While we find the results intriguing, we noticed that with only 20 patients, the results can not reach statistical significance. The confidence intervals will be large, and furthermore, it was open labeled, non randomized, and not placebo controlled". Dr. Kildare's head turned. What's wrong with 20 patients- there are only 93 patients in the whole county anyhow. How do you make placebo milk? And where do you find milk without a label on it?

"I give up", stated Dr. Kildare "The secret will stay here in West Texas"

Meanwhile, months later, a full page advertisement appears in the Journal of the American Association of Physicians announcing "Coming soon form Megatech Pharmaceuticals, an innovative treatment for cancer..."

Emergency Medicine Update

June 2002

1. A well done study using a six way crossover found that IM adrenalin leads to much higher blood levels than SQ. It makes sense, since the blood supply to the muscle is much higher, indeed, they found the thigh route to lead to the highest concentrations. Adrenalin will close off the small vessels in the skin in a SQ injection. One problem. This study was done in healthy volunteers; in frank anaphylaxis, blood flow characteristics are different, although it would make sense that even there, muscle should absorb better than skin (J All Clin Immun Nov 01).
2. Good old Accamol (acetominophen) is still the safest- but still be careful. It causes CRF as often as aspirin, and can cause GI bleeding in doses of 2 gm a day (NEJM 20 Dec 01).
3. We still have a microscope for urinalysis in the ED of Tel Hashomer, but this exam is very non specific, and after a statistical analysis, does not assist us any more than regular dipstick (PIDJ Dec 01). True this study did not consider the wide differences in interpretation that can be caused by different training, but most of us do not do well at this, as previous studies have shown. My own addition to my readers is that occult urinary tract infections do occur in high risk groups such as kids, diabetics and people on steroids, but in a healthy population, a positive dipstick without urinary symptoms requires looking for other diagnoses. Consider that appendicitis and PID can also give a positive dipstick result
4. Why do women experience urinary retention? Mostly its after pregnancy, and has a good prognosis, but other cases are due to a problem that is in the striated muscle of the urethra. Do not assume this is a psych problem- in this study it was uncommon (J Urol Jan 02).
5. Three common causes of false positive opiate assays- rifampin, quinolones especially ofloxicin (Taravid) and poppy seeds (Pereg) (JAMA 26 Dec 01). While we are on the subject of interactions, Israelis love grapefruit juice, and one should recognize that this juice interacts with CYP3A4. It can increase the serum levels of Dihydropyridine Calcium Channel Blockers (felodipine (Penedil), nifedipine (Osmo Adalat and others), nimodipine (Nimotop), and amlodipine (Norvasc). Verapamil probably (Ikapress and others) Cyclosporine (Sandimmun), triazolam (Halcion), estrogens, midazolam (Dormicum) (but not IV), carbamazine (Tegretol), Caffeine (Nescafe and others) , lovastatin (Lovalip) and buspirone (Buspirol) (Presc Newslttr, 161008;2000, see also Mayo Sept 00).
6. The numbers are not important, but emergency physicians doing ultrasounds routinely picked up many cases of unsuspected pericardial effusions (AEM Dec 01). Two take home points- FAST and pericardial ultrasounds are skills that must be learned by everyone, and consider this disease, as well as dissection; both can present with chest pain.

7. I try to make EMU as useful as possible, but this article was so interesting, I had to include it. Years back in the early nineties, we started doing targeted antibiotic delivery by irrigating wounds with cephalosporins. This article tries inhaled antibiotics with the antibiotics that penetrate lung tissue poorly-vanco and gent (AJRCCM 1 Nov 01). The results were fair- probably because it is hard to reach lower airways, and increased secretions prevent the medication from reaching the target.
8. Tell your parents to throw out their ipecac and keep activated charcoal in the house instead. This article investigated whether or not their would be difficulty in getting kids to take the stuff or that parents would give it incorrectly. The results showed that it was given correctly and when it wasn't used, it was because the parents "preferred going to the emergency room" or because they couldn't find the charcoal in the house when they needed it (Peds Dec 01).
9. Here we go again- the surgeons since 1992 (references on request) have been fighting on this issue. JACS in Dec 01 once again feels that HIDA is more sensitive that ultrasound for acute cholecystitis. We as emergency physicians must just keep the following in mind: epigastric pain can be an ulcer, but MI and biliary pain must be kept in the differential; CBC and alk phos are very unreliable, and an ultrasound by the emergency physicians looking for at least stones is indicated in cases of doubt. Fever, diabetes, and pain that is not controlled by injectable pain meds are at higher risk.
10. We reported previously that cellular do not interfere with respirators and monitors. They also do not interfere with the EKG reading of AEDs (Resus Nov 01).

Emergency Medical Update Looks at: Low Back Pain

EMU in the past has discussed this topic and came to the conclusion that conservative treatment is best. Spine, 26(22) 01 compared guidelines of developed countries such as the USA, Netherlands, New Zealand, Finland, Australia, UK, Switzerland (Suisse) Germany, Denmark, Sweden and Israel. Let's see how we compare

1. Firstly, let's look at what is done at Tel HaShomer in routine back pain without signs of cord compression. Radiographs are routine, and a cocktail of Pethidine, Algolysine (Darvon) or Voltaren; and Valium are given. Admission is rare, bedrest may be recommended, and most cases are managed by the orthopedist
2. Israeli guidelines about education include realistic timetable, and make note that referral is generally not necessary. Unlike other countries however, explaining the none serious nature of the disease and avoiding bedrest are not mentioned
3. Our guidelines recommend NSAIDs ,muscle relaxants (in acute pain) and opiods for acute relief. However, paracetomol is not listed as it is in other countries
4. Israeli guidelines do recommend exercise- all other countries list them as not useful
5. All agree manipulation is of unclear effectiveness
6. Bedrest for more than two days discouraged by all countries. Australia, Finland and UK do not recommend it at all

7. Referral- red flags or after six weeks of conservative therapy with worsening symptoms. USA, Germany and Netherlands agree- all others feel referral only if red flags (suspected cauda equina syndrome, saddle anaesthesia, weakness, bilateral radiculopathy, local tenderness, see AHCPR guidelines 1993, Dayo et al)
8. X rays - optional after 5-6 weeks. Only Switzerland and Denmark agree, all others feel only in cases of red flags
9. Physical exam Only Israel includes temperature sensation among all other normal components of a neuro exam- this is a good thing, but they did not include gait, which I believe is very helpful
10. Psychosocial factors are included in everyone's guidelines except for ours

In summary, the Tel Hashomer model has some problems. All of us should be able to take care of back pain, and bedrest and x rays are not needed in general. Opoids are helpful, and valium is a very good muscle relaxer. We have discussed that pethidine is not ideal- use morphine instead. Psychosocial aspects should be considered

Welcome to the new EMU format. Let me remind you that the internet version cost 60 shekels for a year subscription. To receive EMU, please send checks to Dr. Leibman. More info at jbleibmd@yahoo.com.