KD अभिज्ञान™

Issue : 1 March, 2019

VISION

Ensuring ‘well being’ as a humane commitment to enliven humanity.

MISSION

The ‘well being’ ensured by extension of Available, Accessible, Affordable, Safe, Efficacious, Professional and Ethical comprehensive healthcare through state-of-art facilities.

CONTENTS

Letter From The Managing Director

Dear Colleagues,

We hereby introduce KD Abhigyaan, an academic pursuit by KD Hospital, that aims to bring forth clinical excellence cases done at our hospital and share knowledge in the form of original and review articles presented by our consultants.

This is another effort by us to ensure "well being" as a humane commitment to enliven humanity as we believe that by sharing these articles and cases we not only create awareness about the type of cases treated by our consultants but also introduce you to the state-of-the-art facilities that are available at our hospital. It highlights the laudable work done by our dedicated and hard working staff and doctors while following ethics and providing comprehensive healthcare.

Our multidiscilinary team of doctors and staff are available any time at your service and our state-of-the-art facilities are one of their kind in the country.

We bring forth this edition with the hope that it will not only add to your knowledge about the cases and the articles discussed but also make you more familiar with our hospital.

Do get back to us with your suggestions and feedback.

Sincerely,

Dr Adit Desai
Managing Director
KD Hospital
Ahmedabad

Letter From The Academic Director & Chief Editor

Dear Colleagues,

Thank you for your interest in our first edition of KD Abhigyaan. Addressing our mission to ensure available, accessible, affordable, safe, efficacious, professional, ethical, and comprehensive healthcare through state-of-art facilities, we have presented this edition to bring forth the commendable work done by our doctors and staff.

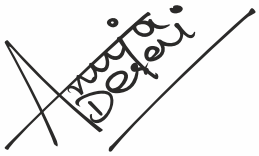
The importance of healthcare publication cannot be overemphasized and sharing our experiences and ideas with others helps in development of the knowledge base that can further help in improvement of healthcare facilities for patients. In preview of the same, we have come up with a compilation of noteworthy cases diagnosed and treated at our hospital. Original and review articles are also included to enhance your knowledge on a particular aspect of the department. While discussing the cases, we have maintained transparency as well as patient privacy.

I, on behalf of the Editorial Board, am grateful to our highly qualified and proficient consultants for sharing these articles while harbouring a sincere desire to deliver high quality care to the patients. It is due to their efforts that these cases could be treated and managed effectively.

KD Hospital is and will continue to be at service for the patients with its best infrastructure and state-of-the-art facilities along with the hard working and dedicated team of doctors, staff, and management.

On behalf of KDH family and Editorial Board,

Sincerely,



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Successful Treatment Of Child With Rabid Dog Bite On Face

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Case Report

Abstract

Dog bite injuries in children are common and differ in severity. Dog bites of facial region result in severe acute trauma that has significant cosmetic and psychological impact on children. We report a case of a one month old baby boy who was brought to the emergency department with severe avulsion injury on the face and left eye having supraorbital bone fracture. Multidisciplinary team of paediatric intensivist, plastic surgeon, and ophthalmologist successfully managed the case with excellent cosmetic and aesthetic results.

Introduction

According to Centre of Disease Control (CDC), dog bites of facial region are most common in children.[1] The mechanism of injury in a dog bite case is unique for every individual and necessitates initial survey, surgical reconstruction, and prophylaxis. Dog bites are common in children, span over a wide range of ages, and can vary in severity ranging from superficial wounds to life-threatening injuries.[2] Operative intervention may be needed frequently and can cause severe morbidity. The incidence rate of facial fractures caused by dog attacks is not known [3] but severe cases are mostly related to underlying bone fracture.[4,5] Investigations and treatment for each case needs to be individualized, and restorative treatment should be planned for the best possible outcome. In neonates, due to lack of immune response, these injuries carry high risk of infection and should be treated with IV antibiotics, tetanus immunoglobin along with specific immunoglobulins.

A multidisciplinary approach is needed for the management of these injuries, repair of soft tissue, and skeletal deformities so that every aspect can be focused upon.[4] Children who have dog bites severe enough to cause fractures frequently require hospitalization and staged procedures, with some requiring prolonged paediatric intensive care unit stays.[2]

Case

A one month old male child was brought to the emergency department in KD Hospital with severe grade III rabid dog bite on face and over the left eyeball extending up to the right eyeball [Fig 1].

On eliciting the history in detail, it was found that the same dog had bitten about 15 other people in the same area during the same time. So it was suspected that the dog may be rabid.

Figure 1: Patient presentation - multiple lacerations over the face with extensive bleeding

The primary assessment of the patient was done in the emergency department where it was found that the patient was having severe crush avulsion and degloving injuries involving the forehead, nose, both upper eyelids upto the medial canthal areas, right cheek, and left temporal area.

The child was febrile with tachycardia and pulse volume was low. Oxygen was started immediately and IV fluid boluses were given. Septic profile along with blood culture was sent and IV antibiotics were administered. Child had already received Rabies immunoglobin and vaccine from the referring hospital. After initial stabilization, child was shifted to NICU.

Multidisciplinary team assessment for wound evaluation was done. Ophthalmological assessment was done for orbit injury and CT scan was done. CT scan revealed a focal acute extradural haemorrhage (EDH) about 3.5 mm wide and few tiny air foci over the left temporal convexity. A depressed fracture was seen through the squamous part of the temporal bone on the left side. Comminuted displaced fracture was seen through the frontal bone on left side extending up to the orbital roof [Fig 2].

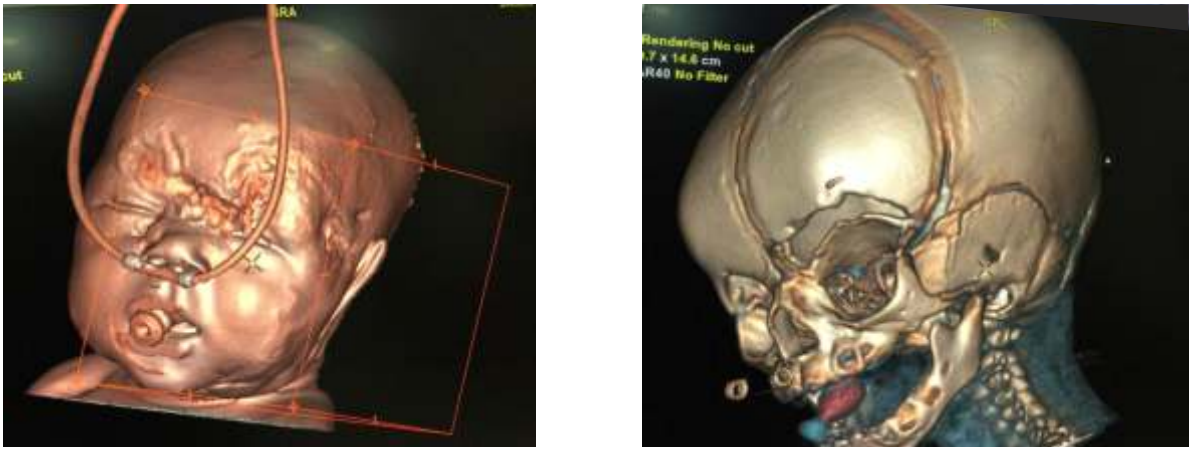

Figure 2: CT scan images

Two units of packed red cell were transfused in view of low haemoglobin. Child was taken in OT after 72 hours of admission for delayed primary closure [Fig 3]. IV antibiotics were continued and septic profile screening was done periodically. Breast feeding was started and supportive treatment was given with regular dressing of the wound.

Figure 3: Post suturing of wound in the operation theatre

The child did well and was discharged in stable haemodynamic condition after 14 days with advice of regular follow up for rabies immunization [Fig 4].

Figure 4: At the time of discharge

Discussion

Dog bite is one of the common childhood accidents causing significant morbidity and mortality in paediatric age group[5,6] as dog bite injuries in children are not only associated with functional, aesthetic, and psychosocial consequences but also with local wound infection and rabies in the absence of proper medical care.[7]

Treatment of dog bite becomes complex as the kinematics of trauma in such cases is intense. Children are the main victims of this type of trauma, and most patients are less than 5 years old.[8,9] These cases are associated with soft-tissue damage, including mutilation, severe lesions, and neuro-sensory impairments. However, they are rarely associated with facial bone fractures.[7,10] The mentioned case, however, was associated with multiple fractures. Attention to the timely repair of such complex lesions ensures satisfactory results.[3] In the present case, the fractures were treated conservatively and the facial wounds were treated surgically while focusing on prevention of rabies and other infections.

A complex case of panfacial fracture by a canine bite in a 4-year-old patient involving mainly the orbit, nasal, and zygomatic areas has been reported.[3] While antibiotic therapy is of prime importance in such cases, for infected bite wounds and wound considerations at high risk of infection, such as those involving the vessels, bones, and joints, status of tetanus immunization and risk of rabies infection needs to be routinely addressed in the management of the bite wound.

Rabies is a deadly and highly fatal zoonotic disease and most often transmitted to humans through a dog bite. Timely and appropriate post exposure treatment can help prevent the morbidity and mortality due to dog bite.[5,11]

The aim of immediate surgical repair is to obtain a satisfactory cosmetic result and to avoid infections. Long-term complications need to be monitored in patients who require operative management after injury.[4]

References

1. Centers for Disease Control and Prevention (CDC). Nonfatal Dog Bite-related Injuries Treated In Hospital Emergency Departments--United States, 2001. MMWR Morb Mortal Wkly Rep. 2003;52(26):605-10.
2. Garvey EM, Twitchell DK, Ragar R, Egen JC, Jamshidi R. Morbidity Of Pediatric Dog Bites: A Case Series At A Level One Pediatric Trauma Center. Journal of Pediatric Surgery. 2015;279(1):50–2.
3. Heitz C, Louzada GP, Conci RA, Rodrigues RL, Fritscher GG. Primary Repair Of A Complex Panfacial Fracture By Dog Bite. Plast Reconstr Surg Glob Open. 2018.
4. Saadi R, Oberman BS, Lighthall JG. Dog-Bite–Related Craniofacial Fractures Among Pediatric Patients: A Case SeriesAnd Review Of Literature. Cranial Maxillofac Trauma Reconstruction. 2018;11(4):249–55.
5. Kale KM, Wadhva SK, Aswar NR, Vasudeo ND. Dog Bites In Children. Indian Journal of Community Medicine. 2006;31(1):24.
6. Bernardo LM, Gardner MJ, Rosenfield RL, Cohen B, Pitetti R. A Comparison Of Dog Bite Injuries In Younger And Older Children Treated In A Pediatric Emergency Department. Pediatric Emergency Care. 2002;18(3):247.
7. Asghar M, Shah SMA, Bano T. Dog Bite In Children: Socio-Demographic And Clinical Characteristics. J Rawal Med Coll; 2017;21(14):100-103
8. Chhabra S, Chhabra N, Gaba S. Maxillofacial Injuries Due To Animal Bites. J Maxillofac Oral Surg. 2015; 14(2):142-53.
9. Overall KL, Love M. Dog Bites To Humans--demography, Epidemiology, Injury, And Risk. J Am Vet Med Assoc. 2001; 218(12):1923-34
10. Tu AH, Girotto JA, Singh N, Dufresne CR, Robertson BC, Seyfer AE, Manson PN, Iliff N. Facial Fractures From Dog Bite Injuries. Plast Reconstr Surg. 2002; 109(4):1259-65.
11. Jakasania AH, Mansuri FM, Dixit GT. An Association Of Knowledge And Misconceptions With Health Seeking Behaviour For Dog Bite: A Cross-sectional Study In Ahmedabad. International Journal of Community Medicine And Public Health. 2017;4(7):2592–5.

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Neonatal Intensive Care Unit

- Dedicated neonatal probes for Echocardiography and Neurosonogram
- Laminar flow facilities for total Parenteral Nutrition and IV preparation
- Bedside EEG facilities

Early Detection And Treatment Of Left DACA Aneurysm Using Coil Embolization

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Dr Masum Shah (MD)
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Case Report

Abstract
A 54 years old female presented with persistent headache since one week after undergoing conservative treatment for hypoplastic left vertebral artery in a tertiary care centre. CT angiograph brain revealed small saccular distal anterior cerebral artery (DACA) aneurysm. Coil embolization was used to obliterate the left DACA aneurysm. The patient was discharged when stable and recovered after rehabilitation.

Introduction
Intracranial aneurysms can be highly morbid and mortal, specifically if they rupture, leading to nontraumatic subarachnoid hemorrhage (SAH). While distal anterior cerebral artery (DACA) is an uncommon location of intracranial aneurysms,[1] its early detection and treatment is of prime importance to prevent morbidity and mortality. The correct diagnosing techniques such as a good quality computed tomography (CT) brain angiography can be greatly helpful in accurately detecting and deciding the type of treatment needed and the prognosis.

Case
A 54 year old normotensive, nondiabetic, female patient presented with a history of severe subacute headache, giddiness, vomiting, and backache to a peripheral hospital. CT brain done elsewhere showed SAH at basal cisterns and inter-hemispheric fissure. She was transferred to a tertiary care centre where CT angiography (CTA) brain was done which showed hypoplastic left vertebral artery and was treated conservatively for 5 days in view of CTA. However, due to persistent headache after discharge, patient came to our hospital for further management.

On initial examination patient was drowsy with Glasgow coma scale (GCS) E3M6V5 and mild neck rigidity. Blood pressure was 166/110 mm Hg and pulse 94/min. CTA brain was repeated at our hospital and revealed a small saccular aneurysm arising from pericallosal branch of left anterior cerebral artery (just superior to body of corpus callosum). There was residual SAH in interhemispheric fissure, posterior part of cingulate sulcus and along few cerebral sulci. Subtle intraventricular bleed was evident in occipital horn of left lateral ventricle with mild prominence of supratentorial ventricular system [Fig 1].

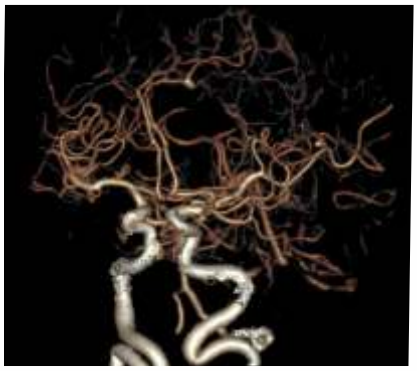


Figure 1: CTA brain showing the DACA aneurysm

Blood pressure was managed using systemic medications. Coil embolization of left DACA aneurysm was done after three days under general anaesthesia. After administration of heparin, 6F femoral sheath was inserted to check digital subtraction angiography (DSA) runs taken and a very small left DACA aneurysm was confirmed [Fig 2].

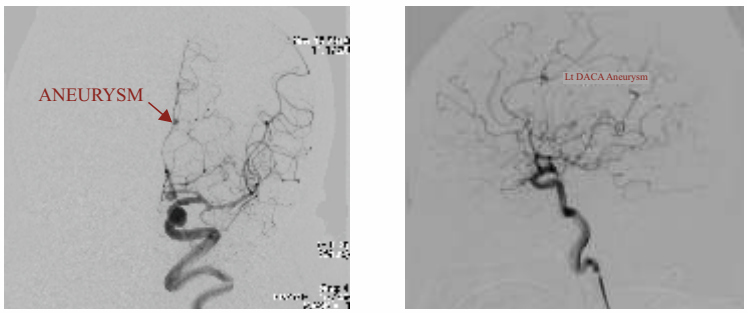


Figure 2: DSA showing very small aneurysm in the left DACA

Using exchange manoeuver, 7F shuttle long sheath was parked in left distal common carotid artery (CCA). A 6F neuron guide catheter was parked in left distal cervical ICA and a Traxcess-14 microcatheter was used to place a Headway-17 microcatheter in the fundus of the aneurysm. The aneurysm was then completely obliterated from circulation by inserting Target 3D, 2x4 cm and microplax 1.5x2 cm size coils [Fig 3].

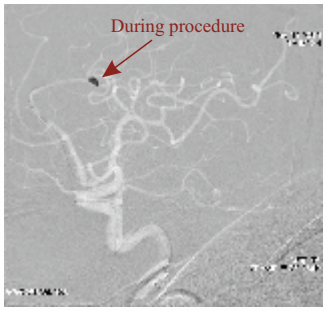
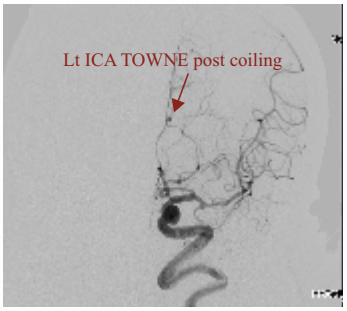


Figure 3: DACA aneurysm during the procedure



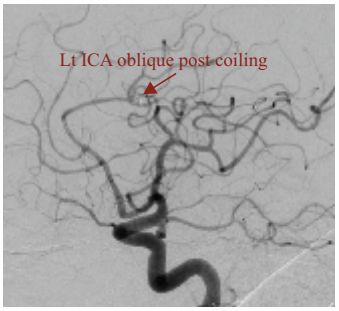


Figure 4: DACA aneurysm obliterated post coiling

The microcatherer was removed and delayed check runs were taken. Normal filling in all branches of ICA and obliteration of the aneurysm was confirmed [Fig 4]. The guide catheter was removed and long sheath exchanged with 8F short femoral sheath. Patient was extubated and shifted to ICU in stable haemodynamic and normal neurological condition.

In the ICU patient was managed conservatively. Foley's catheter was removed three days after the procedure and rehabilitation of the patient was started leading to recovery.

Discussion

Cerebral aneurysms can cause substantial morbidity and mortality, specifically if they rupture, leading to non-traumatic SAH.[2] Though DACA comprise 3-9% of all intracranial aneurysms, the clinical presentation, surgical approach, and outcome of patients with DACA aneurysms are at variance with other anterior circulation aneurysms. So, early treatment of DACA aneurysms is advisable, even if small, because of their tendency to rupture early.[1, 3-5] Ruptured DACA aneurysms cause intracerebral haemorrhage (in addition to SAH) in more than one-half of cases and are associated with worse outcome after rupture when compared with aneurysms in other locations.[5] Despite all improvements in the microsurgical techniques and anaesthesia, DACA aneurysms still have higher morbidity and mortality rates than other supratentorial aneurysms.[4]

Though DACA aneurysms are usually small, they are associated with ICH more frequently than intracranial aneurysms in other locations and need aggressive treatment even if very small because of their tendency to early rupture. By understanding the relationship between the DACA aneurysms and the surrounding vessels, the appropriate microsurgical techniques and the skilled experience of the neurosurgeon, the surgical treatment of these aneurysms with a significant low morbidity and mortality rates can be achieved.[4]

Navigation computed tomographic (CT) angiography have been used successfully for the precise localization of DACA aneurysms.[3] Meta-analysis studies have shown noninvasive CT angiography to be highly accurate in diagnosing intracranial aneurysms, specifically when using modern multidetector CT.[6] We use the 128 slice 3D CT scan, which is more sensitive for aneurysms and allows for better image reconstruction and resolution, while decreasing the scan time and radiation dose considerably.[7,8]

Surgical treatment modalities for DACA aneurysm used widely are either surgical clipping or endovascular coiling. Clipping can be used with various surgical approaches. The surgical clipping for DACA aneurysms is difficult, because of narrow operative field, protection of bridge veins, and interhemispheric adhesions.[1] Though endovascular embolization using detachable coils is associated with technical difficulties and high procedure related rupture rate, it has emerged as a safe and effective treatment option for intracranial aneurysms. Some authors reported good results after coiling of DACA aneurysms.[9,10] Studies comparing the clinical outcomes and treatment-related complications of endovascular coiling with microsurgical clipping for treating ruptured DACA aneurysms have shown coiling to be more favourable to clipping.[11]

While endovascular coiling of DACA aneurysms is associated with immediate occlusion rates of 85% and a low recurrence rate at follow-up, endovascular treatment of DACA aneurysms is also associated with complication rates higher than those reported for endovascular treatment of aneurysms in other locations.[5]

The relatively smaller size, distal location and broad neck of the aneurysm, and the small diameter of parent vessel pose technical challenge for endovascular therapy, but the recent refinements in endovascular therapy such as the availability of soft/ultra-soft coils, microcatheters, and stent assisted coiling have lead to a

reported success rate of 97.6% . No procedure-related thromboembolic events have been observed in patients treated by endovascular coiling.[1,3,5]

Ruptured DACA aneurysms present with similar one-year favourable outcome as ruptured aneurysms elsewhere, but their mortality is lower. Factors predicting favourable outcome are advanced age, poor grade on admission, re-bleeding before treatment, ICH, IVH, and severe preoperative hydrocephalus.[2]

References

1. Liu J, Huang Q, Shen J, Xu Y. Endovascular Treatment Of Ruptured Distal Anterior Cerebral Artery Aneurysm. Neurology India. 2010;58(2):259.
2. Lehecka M, Dashti R, Lehto H, Kivisaari R, Niemelä M, Hernesniemi J. Distal Anterior Cerebral Artery Aneurysms. Acta Neurochir Suppl. 2010;107:15–26.
3. Chhabra R, Gupta S. Distal Anterior Cerebral Artery Aneurysms: Current Trends. Neurology India. 2016;64(6):1149.
4. Orz Y. Surgical Strategies And Outcomes For Distal Anterior Cerebral Arteries Aneurysms. Asian Journal of Neurosurgery. 2011;6(1):13.
5. Sturiale C, Brinjikji W, Murad M, Cloft H, Kallmes D, Lanzino G. Endovascular Treatment Of Distal Anterior Cerebral Artery Aneurysms: Single-Center Experience And A Systematic Review. American Journal of Neuroradiology. 2013;34(12):2317-2320.
6. Menke J, Larsen J, Kallenberg K. Diagnosing Cerebral Aneurysms By Computed Tomographic Angiography: Meta-analysis. Annals of Neurology. 2011;69(4):646-654.
7. Gu J, Shi H, Han P, Yu J, Ma G, Wu S. Image Quality And Radiation Dose For Prospectively Triggered Coronary CT Angiography: 128-Slice Single-Source CT versus First-Generation 64-Slice Dual-Source CT. Scientific Reports. 2016;6(1).
8. Korogi Y, Takahashi M, Katada K, Ogura Y, Hasuo K, Ochi M *et al*. Intracranial Aneurysms: Detection With Three-dimensional CT Angiography With Volume Rendering—Comparison With Conventional Angiographic And Surgical Findings. Radiology. 1999;211(2):497-506.
9. Menovsky T, van Rooij W, Sluzewski M, Wijnalda D. Coiling Of Ruptured Pericallosal Artery Aneurysms. Neurosurgery. 2002;50(1):11-15.
10. Keston P, White P, Horribine L, Sellar R. The Endovascular Management Of Pericallosal Artery Aneurysms. Journal of Neuroradiology. 2004;31(5):384-390.
11. Park K, Kim B, Lim Y, Chung J, Kim D, Joo J *et al*. The Role Of Endovascular Treatment For Ruptured Distal Anterior Cerebral Artery Aneurysms: Comparison With Microsurgical Clipping. Journal of Neuroimaging. 2013;25(1):81-86.

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Rare Case Of Ectopic Opening Of Non-Excreting Ureter In Vaginal Vestibule Diagnosed On MR Urography

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Case Report

Abstract

Ectopic opening of non-duplicated ureter with absence of kidney's excretory function on ipsilateral side becomes clinically and radiologically difficult to diagnose as there are no specific symptoms or signs leading to suspicion and common radiology procedures such as ultrasound, X-ray and even CT intravenous urography are not able to locate the ectopic opening. Hence, MR urography remains the diagnostic modality. A case with nonspecific symptoms related to urinary tract pathology (like pain in this case) presented to our department and was investigated with imaging studies right from X-ray, ultrasound, and CT urography to MR urography. Finally, MR urography was able to find accurate diagnosis.

Introduction

As per Weigert-Meyer rule,[1] in cases of complete duplication of collecting system, ureter of lower moiety shows ectopic opening. But it is unusual to have single ureter with ectopic lower opening and usually clinical presentation simulates other urinary tract pathologies. Thus, it may go undiagnosed or is diagnosed in adulthood although it is a congenital anomaly and not an acquired condition. Urography studies like intravenous urography (IVU)/ CT urography/ MR urography are helpful to locate ectopic lower opening of ureter.[2] But in cases similar to the present case, where kidney on side of ectopically opening ureter is not showing excretory function, MR urography remains single diagnostic modality of choice.[2]

Case

A 22-year-old female patient came to radiology department for ultrasound of abdomen to evaluate left sided flank pain which revealed gross hydronephrosis in left kidney and gross left sided hydroureter up to traceable lower part. Further evaluation with CT/MR urography was suggested.

CT urography confirmed the USG findings. There was absence of contrast excretion on left sided collecting system. MR urography revealed stricturous narrowing at lower end of ureter and the lower opening of the ureter was found to be in left lateral part of vaginal fornix. Opening of ureter in vaginal fornix was demonstrated in coronal and sagittal planes of T2 fat suppressed images (Fig 1&2). Similar findings were also demonstrated with 3D volume rendered (VR) images (Fig 3&4).

Figure 1: Coronal T2 fat suppressed image showing ectopic opening of lower end of ureter in vaginal fornix on left side

Figure 2: Sagittal T2 fat suppressed image showing ectopic opening of lower end of ureter in vaginal fornix on left side

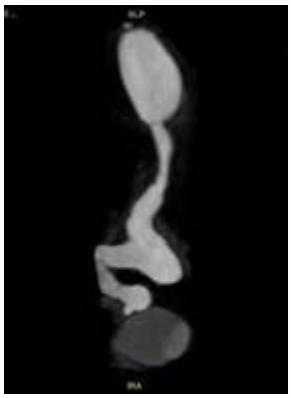

Figure 3: 3D VR projection of MR urography showing left sided hydronephrosis, hydroureter, and ectopic opening of lower end of ureter

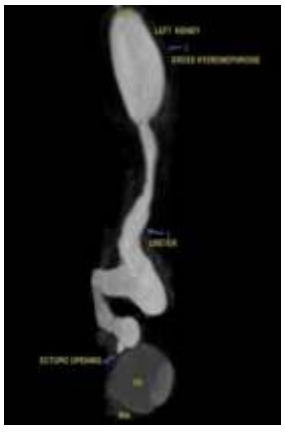

Figure 4: 3D VR projection of MR urography showing left sided hydronephrosis, hydroureter, and ectopic opening of lower end of ureter with annotation

Discussion

Though ectopic ureter is a congenital anomaly, diagnosis cannot be generally made till advanced age because of inadequate anamnesis and assessments.[3,4] As the patient ages, other causes of urinary incontinence are predominantly contemplated, and eventually the diagnosis of ectopic ureter is overlooked.[5] Unlike women; in men, ectopic ureter generally opens into the posterior urethra and continence is preserved. Ectopic ureteral opening is more often associated with single collecting system in men while in women it is more frequently associated with double collecting system.[6]

Diagnosis of suprasphincteric ureteral opening is made during investigations for the etiology of the recurrent urinary infections. However, in cases with infrasphincteric ureteral opening, normal urination pattern together with continuous urinary incontinence is the most frequently seen symptom.[7] Occasionally, although ureter opens into infrasphincteric region, incontinence does not manifest itself if it drains an excessively atrophic renal segment or in the presence of compression of lower third of the ureteral segment between muscles of the external sphincter till advanced age. It may, however, become symptomatic at a late stage in conditions like childbirth, which weakens external sphincter.[8] In the present case also, incontinence was present since childhood but could not be diagnosed because of inadequate evaluation.

A case of a single ectopic vaginal ureter in a 6-year-old girl with urinary incontinence due to poorly functioning hypoplastic kidney was diagnosed using enhanced computed tomography with contrast medium, while excretory urography and renal sonography failed to visualize it.[9] In a 32-year-old woman, MR urography revealed a double collecting system in both kidneys and also grade 3 hydroureteronephrosis in the collecting system which drained the upper pole of the right kidney.[2]

In the present case, the diagnosis of flank pain in adult was initially attributed to urinary incontinence and treatment was planned accordingly. Though many diagnostic tools, including ultrasound,[10] voiding cystourethrography, IV urography, CT, and cystoscopy are available and were used for the detection of urinary system anomalies, these imaging modalities do not provide adequate information about ectopic ureteral openings. MR urography, on the other hand, can demonstrate dilated collecting system, ectopic ureter, and extravesical insertion point of the ectopic ureter, and delineate malformation completely.[11,12]

Congenital heart disease and renal dysplasia can accompany ectopic ureter. Additional anomalies were not detected in our case. According to Weigert-Meyer law, ureter draining the lower pole should open more cranially, and become refluxive.[1] However, in this case, the patient had single ureter and no duplication, as is present usually.

In conclusion, for investigating ectopic ureter openings, especially in non- excreting kidney cases, MR urography is extremely helpful and sometimes the only imaging modality to accurately diagnose the condition as in the present case.

References

1. Fernbach SK, Feinstein KA, Spencer K, Lindstrom CA. Ureteral Duplication And Its Complications. Radiographics. 1997;17:109–27.
2. Demir M, Ciftci H, Kilicarslan N, Gumus K, Ogur M, Gulum M *et al*. A Case Of An Ectopic Ureter With Vaginal Insertion Diagnosed In Adulthood. Türk Üroloji Dergisi/Turkish Journal of Urology. 2015;41(1):53-55.
3. Ogawa A, Kakizawa Y, Akaza H. Ectopic Ureter Passing Through The External Urethral Sphincter: Report Of A Case. J Urol. 1976;116:109–10.
4. Toprak U, Erdoğan A, Paşaoğlu E, Karademir MA. The Importance Of Pyelography Phase Computed Tomography In The Diagnosis Of Ectopic Vaginal Ureter. Ankara Üniversitesi Tıp Fakültesi Mecmuası 2007;60:35–7.
5. Meroğlu O, Zorlu F, Peker A, Duran H. Ectopic Ureter: Case Presentation. Turkish Journal of Urology. 1999;25:109–11.
6. Avni EF, Matos C, Rypens F, Schulman CC. Ectopic Vaginal Insertion Of An Upper Pole Ureter: Demonstration By Special Sequences Of Magnetic Resonance Imaging. J Urol. 1997;158:1931–2.
7. Kibar Y, Avci A, Akay O, Dayanc M. Dribbling Of Urine Due To Ectopic Vaginal Insertion Of An Upper Pole Ureter Diagnosed By Magnetic Resonance Urography. Int Urol Nephrol. 2005;37:695–7.
8. Jain KA. Ectopic Vaginal Insertion Of An Obstructed Duplicated Ureter In An Adult Female: Demonstration By Magnetic Resonance Imaging. Clin Imaging. 2007;31:54–6.
9. Komatsu K, Niikura S, Maeda Y, Ishiura Y, Yokoyama O, Namiki M. Single Ectopic Vaginal Ureter Diagnosed By Computed Tomography. Urologia Internationalis. 1999;63(2):147-150.
10. Fannin O, Cammack JT, Crotty KL, Neal DE. Bilateral Single Ectopic Ureters: Diagnosis Using Transrectal Ultrasound. J Urol. 1993;150:1229–31.

11. Kibar Y, Avcı A, Akay O, Dayanç M. Dribbling Of Urine Due To Ectopic Vaginal Insertion Of An Upper Pole Ureter Diagnosed By Magnetic Resonance Urography. Int Urol Nephrol. 2005;37:695–7.

12. Krishnan A, Baskin LS. Identification Of Ectopic Ureter In Incontinent Girl Using Magnetic Resonance Imaging. Urology. 2005;65:1002.

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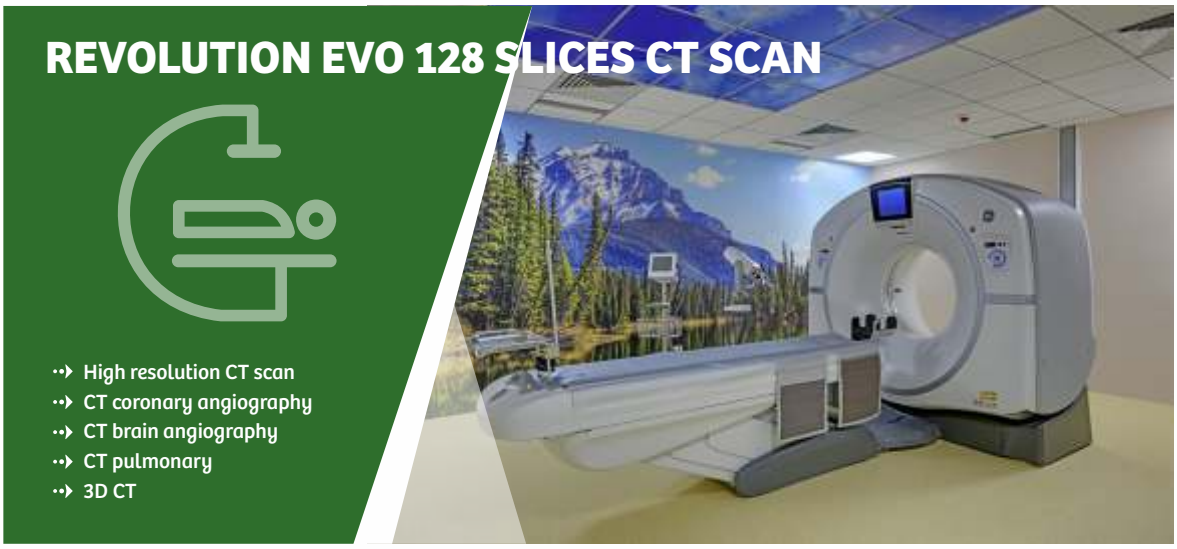

Salvage Of Right Lower Limb After Popliteal Artery Injury Caused By Blunt Trauma: A Case Report

Dr Bhupesh D Shah (MCh, DNB)
Dr Suresh T Bhagia (MS, FRCS, DNB)

Case Report

Abstract
A 21 years old male presented with injury to both knees as a result of blunt trauma. Preliminary examination revealed a blocked/ damaged right popliteal artery with fracture of both tibial tuberosities. Rapid diagnosis and quick surgical intervention resulted in the preservation of his right lower limb.

Introduction
Blunt trauma to the knee resulting in injury to the popliteal artery is not a new entity. In 28 - 46% cases, blunt trauma to the lower extremity has been associated with injury to the popliteal artery in the form of transection, occlusion, laceration, perforation, arteriovenous fistula, or intimal injury. Prompt diagnosis and treatment is needed in these cases as delay in the diagnosis can lead to the need for amputation in this limb-threatening injury.[1,2]

Case
A 21 years old male presented to the emergency department with history of injury to both knees due to fall of a heavy sack (about 60 kgs) on his knees while working in a factory in the morning. Patient consulted elsewhere and primary care was given, after which he was referred to our centre for further management.

On clinical examination patient was haemodynamically stable. Local examination revealed that the posterior tibial and dorsalis pedis (DP) pulses were not palpable in the right lower limb. There was bilateral swelling in the knees and the calf region was bruised on the right leg. Movements were positive in all toes. Radiograph of knee joint revealed bilateral fracture of medial tuberosity of upper tibia.

The arterial doppler of right lower limb showed biphasic low velocity wave form in right popliteal artery. There were no doppler signals in posterior tibial artery with signs of occlusion. Low velocity monophasic dampened waveform in right anterior tibial artery was present [Fig 1].

CT angiography showed no obvious contrast filling in the popliteal artery. Post traumatic acute thrombosis in popliteal artery for an approximate length of about 4.8 cm. was present. There was reformation of anterior tibial artery (ATA) and posterior tibial artery (PTA) by small collateral arterial tributaries . Also, presence of contrast opacification of ATA, PTA, and peroneal arteries upto mid leg region with mild luminal narrowing was noted for a length about 2.2 cm in proximal PTA and for a length about 8.9 mm. in ATA with faint opacification at narrowing site. Salter Harris type III displaced comminuted fractures of medial and intercondylar area of right tibia was observed [Fig 2].

Under spinal anaesthesia, patient was placed in supine position. Using longitudinal incision in right infra-genicular area antero-medially, the distal popliteal artery and anterior and posterior tibial arteries were exposed. Simultaneously, greater saphenous vein was harvested from the ipsilateral thigh. Then end-to-side interposition grafting was done from distal popliteal artery to proximal posterior tibial artery using reversed greater saphenous vein. Antibiotics and supportive treatment was given. The left limb tibial fracture was treated with screw fixation. The right foot became warm and right dorsalis pedis and posterior tibial artery pulses were palpable. Post-operative doppler of right lower limb clearly indicated good triphasic flow in all arteries of lower limb [Fig 3]. Thus, the right lower limb was salvaged.

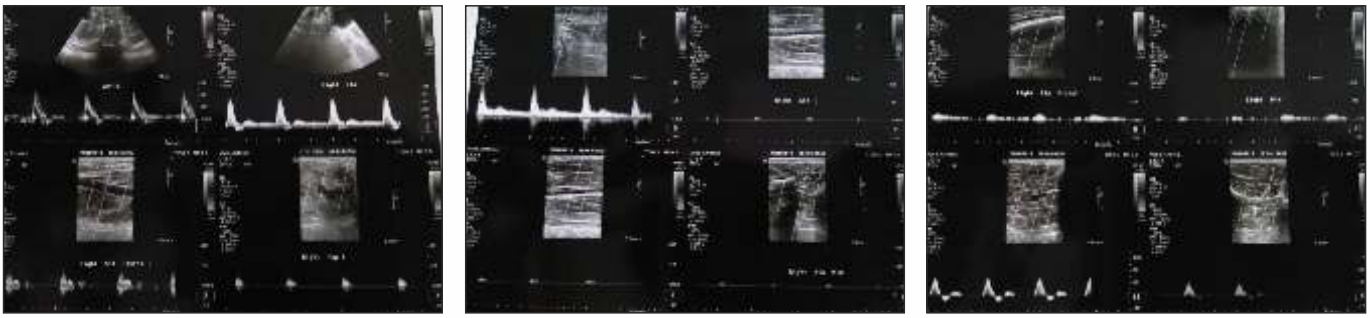

Figure 1: Pre-operative arterial doppler

Figure 2: Pre-operative CT angiography of both lower limbs

Figure 3: Post-operative arterial doppler

Discussion

Vascular injuries remain amongst the most challenging entities encountered in trauma care. Improvements in diagnostic capabilities, resuscitation approaches, vascular techniques, and prosthetic device options provide considerable advancement in case of these patients. Timely diagnosis and control of bleeding sources is vital for successful management of vascular injury. To facilitate this task, treatment providers must appreciate the limitations and capabilities of diagnostic imaging modalities and understand when, how, and where to effectively apply these strategies.[3]

CT angiography is necessary in the evaluation of patients with blunt lower-extremity trauma who present with an abnormal neurovascular examination and diminished pulse with associated indications for mandatory operative exploration.[4]

Patients with blunt injuries have higher rate of amputation as compared to patients with penetrating injuries.[5] Surgery is required in more than 90% of these kind of injuries. Fasciotomy is required in about 50% of the patients with these kind of injuries.The most significant independent risk factor for limb loss remains a failed revascularization.[6]

Limb salvage rate is more than 80% and survival rate approaches 98% in lower limb arterial injury.[7,8] In the present case also timely diagnosis and treatment by multidisciplinary team helped in preventing amputation as complete recovery and revascularization of the right lower limb was possible.

References

1. Frykberg ER. Popliteal Vascular Injuries. Surg Clin North Am. 2002; 82(1):67–89.
2. Simmons JD, Gunter JW 3rd, Schmieg RE Jr *et al*. Popliteal Artery Injuries In An Urban Trauma Center With A Rural Catchment Area: Do Delays In Definitive Treatment Affect Amputation? Am. Surg. 2011; 77: 1521–1525.
3. Teixeira PGR, DuBose J. Surgical Management Of Vascular Trauma. Surg Clin North Am. 2017; 97(5):1133–1155
4. Abou-Sayed H, Berger DL. Blunt Lower-Extremity Trauma And Popliteal Artery Injuries: Revisiting The Case For Selective Arteriography. Arch Surg. 2002;137(5):585–589.
5. Nishimura K, Hamasaki T, Ohno T, Nishihara A, Ito H, Ishiguro S. Revascularization For Acute Blunt Popliteal Artery Injury. Acute Med Surg. 2015; Dec 22;3(3):276-278.
6. Mullenix P, Steele S, Anderson C, Starnes BW, Salim A, Martin MJ. Limb Salvage And Outcomes Among Patients With Traumatic Popliteal Vascular Injury: An Analysis Of The National Trauma Data Bank. J Vasc Surg. 2006;44(1):94–100.
7. McCabe C, Ferguson C, Ottinger L. Improved Limb Salvage In Popliteal Artery Injuries. J Trauma. 1983;23(11) :982- 985.
8. Hafez HM, Woolgar J, Robbs JV. Lower Extremity Arterial Injury: Results Of 550 Cases And Review Of Risk Factors Associated With Limb Loss. J Vasc Surg. 2001;33(6):1212–1219.

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A Case Of New-Onset Refractory Status Epilepticus (NORSE) Caused Due To Autoimmune Encephalitis

Dr Priyank Shah (MD, DM)

Case Report

Abstract

A 35 year old female with complaints of headache, fever, cognitive impairment, decreased speech, and involuntary movements of all four limbs of subacute onset presented to the emergency department. The patient was diagnosed to have super refractory status epilepticus with probable etiology being autoimmune encephalitis. The patient was treated intensively with antibiotics and antiepileptics. Tracheostomy was done and the patient was on ventilator. Complete recovery was achieved within 2 months of initial treatment.

Introduction

Status epilepticus has two operational dimensions, t1 and t2, as per International League Against Epilepsy (ILAE)[1]:

- Status epilepticus results from either the failure of mechanisms responsible for seizure termination or from the initiation of mechanisms that lead to abnormally prolonged seizures (after time point t1)
- Status epilepticus can have long term consequences (after time point t2), including neuronal death, neuronal injury, and alteration of neuronal networks, depending on the time and duration of seizures

Based on the data available, ILAE has proposed t1 and t2 as 5 and 30 minutes, respectively, for generalised convulsive status epilepticus (GCSE).

Status epilepticus is termed as refractory status epilepticus (RSE) when it persists despite administration of at least two standard anticonvulsant medications. New-onset refractory status epilepticus (NORSE) has been defined as a condition, and not a specific diagnosis, in which there is new onset of refractory status epilepticus without a clear acute or active structural, toxic, or metabolic cause in a patient without active epilepsy.[2]

Case

A 35 year old female patient presented with complaints of generalized headache since 25 days, cognitive impairment with memory loss and fluctuations in behaviour since 20 days, decreased speech (word output) since 10 days, involuntary movements of all four limbs and loss of consciousness since 4 days, and intermittent fever since 2-3 days. History revealed no such episode in the past. There was no significant personal, family, or drug history.

On examination, patient was afebrile, with pulse at 96/min, 100/70 mm Hg blood pressure, respiratory rate of 18/min. and no rashes. The Glasgow Coma Scale (GCS) revealed eye opening (E), verbal response (V), and motor response (M) to be E2M5V1, indicating pain on eye opening, no verbal response, and localized pain in left upper limb. So, preliminary diagnosis of Status epilepticus secondary to subacute meningoencephalitis was made but the etiology needed to be ascertained to be either autoimmune, viral, or tubercular.

Blood reports showed increased sodium levels. Chest X-ray and ultrasound pelvis and abdomen was normal. Thyroperoxidase (TPO) antibodies were also negative. CSF findings showed 100 lymphocytes with normal protein. MRI and EEG findings were normal [Fig 1,2].

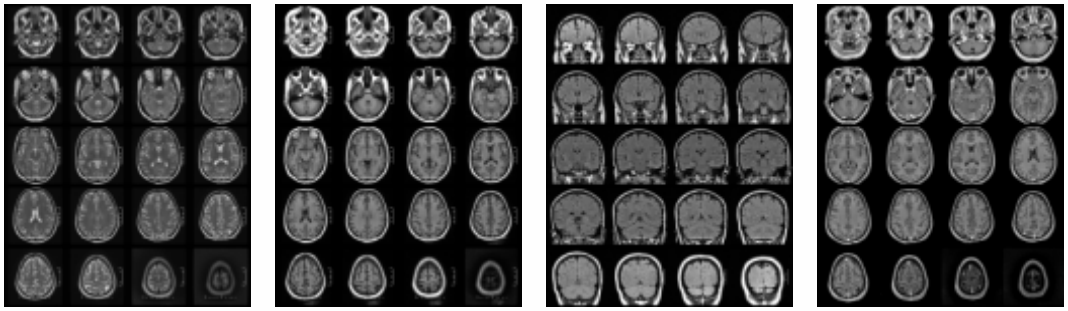

Figure 1: MRI brain with contrast

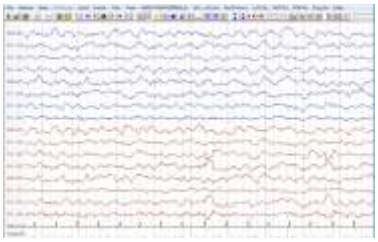

Figure 2: EEG (Electroencephalograph) at the time of admission

The autoimmune panel was negative [Table 1] and CSF autoimmune panel was not performed due to cost considerations.

Auto Immune Encephalitis Panel (Qualitative) (Indirect Immunofluorescence)		
• Glutamate Receptor (NMDA)	NEGATIVE	Negative
• Glutamate Receptor (AMPA Type 1&2)	NEGATIVE	Negative
• GABA b Receptor	NEGATIVE	Negative
VGKC Associated Protein		
• Contacting Associated Protein 2 (caspr2)	NEGATIVE	Negative
• Leucine Rich Glioma Inactivated Protein 1 (LGI1)	NEGATIVE	Negative

Table 1: Autoimmune Panel report

On admission, the patient was given antibiotics, antiviral, two antiepileptics, and steroids. Refractory status epilepticus was treated with injection of antiepileptic and adding one more antiepileptic medication on the same day. On the second day, another episode of seizure was treated with increased dose of the antiepileptic medications and the EEG was repeated. Focal intermittent seizures presented on the same day and the patient was intubated and put on ventilator. Continuous EEG monitoring was started and sedatives were administered in gradually increasing dose based on the seizure and EEG.

On the third day, super refractory status epilepticus presented and the dose of sedatives was further increased with addition of anticonvulsant and intravenous magnesium sulphate, based on continuous EEG monitoring.

On the fourth day, another episode of seizure followed and as the patient was not responding to antiepileptics and steroids, sedative was tapered and omitted. As the refractory seizures continued, either plasma exchange (PLEX) or immunotherapy with intravenous immunoglobulin (IVIG) had to be opted for. Due to cost considerations of IVIG, plasmapheresis was started. EEG was monitored continuously and dose of anti-epileptic drugs was changed accordingly.

No seizure was observed from day five to day nine and PLEX was continued for next four cycles on alternate days. Tracheostomy was performed and the dose of medication was tapered. Ventilator-associated pneumonia (VAP) developed and was managed with antibiotics. Hypotension developed and was treated with ionotropes.

Condition of the patient started improving on the tenth day. By the thirteenth day, the condition was stable. Though fever was present, blood pressure was maintained without ionotropes. The patient was gradually weaned off the ventilator. The Glasgow Coma Scale revealed a score of E1M3VT.

By the fourteenth day, patient was stable, and had no fever or seizures. CNS examination revealed a score of E2M5VT. Medication was now given orally instead of intravenously. However, on the eighteenth day, there was another episode of facial focal seizure and the MRI brain with contrast (which was again normal) [Fig 3] and EEG were repeated [Fig 4].

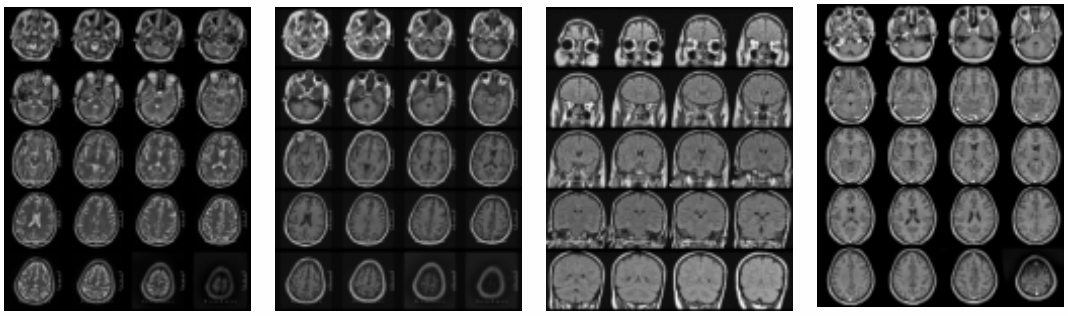

Figure 3: MRI brain with contrast on day 18

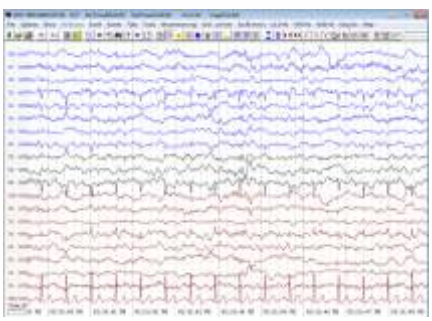

Figure 4: Repeat EEG on day 18

However, another episode of facial focal seizure presented on Day 20 with Glasgow scale of E4M5VT. EEG was normal and another anti-seizure medication was added. Seizures presented again on day 22 and 23 and the medications were changed and doses altered. The tracheostomy tube was removed on the 24th day and antibiotics were changed according to culture to treat fever.

The patient was then discharged on the 29th day in a stable condition. No fever was present and the CNS examination showed E4M6V2. The medications at discharge included a tapering dose of oral steroids, antibiotics, and seven anti-seizure drugs.

On follow-up after 15 days of discharge patient was afebrile, had no fever, and the condition was much better. CNS examination showed Glasgow scale of E4M6V4. The patient was able to walk with support.

Discussion

The yearly incidence of status epilepticus has been reported to range from 7 to 41 cases per 100,000. It has been defined by most population-based studies using a duration of at least 30 minutes. The incidence of status epilepticus follows a U-shaped distribution, with relatively high incidence rates in children below one year and then rising again in older adults above 60 years.[1]

NORSE follows a distribution similar to status epilepticus and can occur at any age but preferentially affects school-age children, young adults, and people around 65 years in age. In adults, females are more likely to be affected than males, but probably not in children.[3] Though the causes of RSE can be identified within 24-72 hours of presentation in most cases of chronic seizure disorder, as it occurs commonly due to an obvious acute brain injury (stroke, trauma, infection, etc.) or serious acute medical illness, in cases of NORSE, it may present without any clear acute or active structural, toxic or metabolic cause, in a healthy patient without active epilepsy.[1] NORSE patients are generally previously healthy, young individuals[3] and nearly half of the cases remain cryptogenic, but autoimmune encephalitis is the most commonly identified cause.[5]

Brain MRI findings are abnormal in nearly 62% of the cases and were identified on fluid-attenuated inversion recovery images.[5] In 73% cases, inflammatory CSF findings were evident.[5] The present case was very much similar to another case[3] reported to have convulsive attacks where even after the use of several anticonvulsants, intravenous anaesthetics had to be used.

Most of the patients received 4-11 antiseizure medications and continuous anaesthetics.[5] In the present case also, the patient had to be administered 4-7 antiseizure drugs during the period of hospital stay and at the time of discharge. The duration has been shown to be longer in cryptogenic cases.[5] PLEX has been proposed to prevent complications of status epilepticus and prolonged hospitalization.[4]

RSE is characterized by high mortality and morbidity and this includes patients with encephalitis.[6] Most of the patients with RSE have a poor outcome and better prognosis is generally indicated in cases that achieve control of the status epilepticus without requiring prolonged drug-induced coma or severe electroencephalographic suppression.[7] Epilepsy develops in most cases. Outcome at discharge is poor but improves during follow-up.[5]

This case highlights that NORSE is not an uncommon disorder but is underdiagnosed most of the times. So, any new patient with RSE should be identified early so that early and aggressive medical treatment can be provided. PLEX/IVIG should be done early to prevent complications.

Autoimmune encephalitis is one of the common cause of NORSE, so work up needs to be done in each case of RSE. Autoantibody testing is extremely important for the proper diagnosis of autoimmune encephalitis. However, the tests have complexities that require consideration, and taking certain test results as conclusive evidence of autoimmune encephalitis can be a mistake.[8]

We were successful in treating this case of NORSE due to timely diagnosis and treatment. The patient had good prognosis and is on only two epileptic drugs, three months after discharge.

References

1. International League Against Epilepsy (ILAE) : A Global Agenda. 2015 Annual Report.
2. Sculier C, Gaspard N. New Onset Refractory Status Epilepticus (NORSE). Seizure. 2018.
3. Ishikura T, Okuno T, Araki K, Takahashi M, Watabe K, Mochizuki H. A Case Of New-onset Refractory Status Epilepticus (norse) With An Autoimmune Etiology. Rinsho Shinkeigaku. 2015;55(12):909-913.
4. Li J, Saldivar C, Maganti R. Plasma Exchange In Cryptogenic New Onset Refractory Status Epilepticus. Seizure. 2013;22(1):70-73.
5. Gaspard N, Foreman B, Alvarez V, Cabrera Kang C, Probasco J, Jongeling A *et al.* New-onset Refractory Status Epilepticus. Neurology. 2015;85(18):1604-1613.
6. Novy J, Logroscino G, Rossetti A. Refractory Status Epilepticus: A Prospective Observational Study. Epilepsia. 2010;51(2):251-256.

7. Hocker S, Britton J, Mandrekar J, Wijdicks E, Rabinstein A. Predictors Of Outcome In Refractory Status Epilepticus. JAMA Neurology. 2013;70(1):72.

8. Lancaster E. The Diagnosis And Treatment Of Autoimmune Encephalitis. Journal of Clinical Neurology. 2016;12(1):1.

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Takotsubo Cardiomyopathy : A Case Report

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Case Report

Abstract

A 74 years old woman came with complaints of severe chest discomfort and breathlessness. A past history of a recent surgical procedure, stress precipitants, and abnormal cardiac investigations lead to the diagnosis of Takotsubo Cardiomyopathy. The patient was treated with loop diuretics, nitroglycerin, ACE inhibitors, and beta blockers.

Introduction

Takotsubo Cardiomyopathy (TCM, Stress Cardiomyopathy, Apical Ballooning Syndrome, Broken Heart Syndrome) was first reported in Japan in the year 1990.[1] Patients are usually postmenopausal women, undergoing acute emotional stress, acute medical illness, or undergoing surgical procedures. These patients have signs and symptoms of an acute coronary syndrome with mid and apical left ventricular (LV) wall motion abnormalities and non-obstructive coronary artery disease on angiography. While TCM accounts for 1-2% of all cases of suspected acute myocardial infraction (MI), the disease is still a matter of debate. It is reported to usually recover within weeks to months.[2]

Case

A 74 years old female patient presented to the emergency department of KD Hospital with complaints of severe chest discomfort and breathlessness. Patient is a known case of systemic hypertension. Past history was suggestive of vaginal hysterectomy a week ago elsewhere. Patient was referred as she was having severe discomfort and dyspnoea at rest since past 4 hours. On examination, patient was afebrile, pulse 104/min, blood pressure 150/90 mm Hg. Auscultation findings revealed bilaterally equal air entry, bilateral crepitations, normal S1/S2 sounds with S3 gallop.

Electrocardiogam (ECG) showed ST segment elevation in precordial leads from V2 to V4 and T wave inversion in V5 and V6 [Fig 1]. The Troponin I levels were found to be mildly elevated. B-type natriuretic peptide (BNP) was 3200 pg/ml and serum creatinine level was 1.33 mg/dl.

Coronary angiography was done which did not reveal any obstructive coronary lesions [Fig 2]. However, the Ventriculogram showed spared motion of basal segments with hypokinesia of mid and apical segments of left ventricle [Fig 3]. Echocardiography (ECHO) revealed a balloon shaped dilated left ventricle and hypokinetic mid and apical segments of left ventricle with left ventricular ejection fraction (LVEF) of 30% [Fig 4, 5]. As the history indicated the presence of a stress precipitant (patient was in tremendous stress regarding the operative procedure, vaginal hysterectomy, she had undergone a week back), patient was diagnosed with TCM.

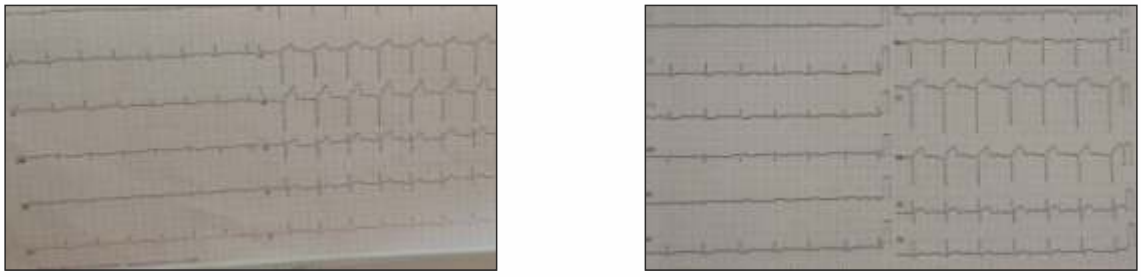

Figure 1: ECG on admission showing ST elevation in leads V2-V4 and T wave inversion in lead V5-V6

Figure 2: Coronary Angiography showing normal coronary arteries

Figure 3: LV Angiogram shows hypokinesia of mid and apical segments and spared basal segment

Figure 4: ECHO PLAX (Parasternal Long Axis) view on admission (LVEF-30%)

Figur 5: ECHO PSAX (Parasternal Short Axis) view on admission (LVEF -30%)

The patient was hospitalized and managed using intravenous (IV) loop diuretics, IV Nitroglycerin (NTG) followed by ACE inhibitors and beta blockers. There was improvement of dyspnoea and congestive cardiac failure over next 7 days [Fig 6] and the patient was discharged. During follow up after 6 weeks, there was improvement in the LVEF at rest from 30% to 55% [Fig 7, 8].

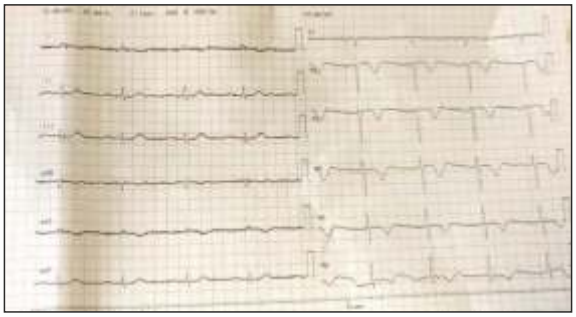

Figure 6: ECG on discharge showing T wave inversion in leads V2-V6

Figure 7: ECHO PLAX view on follow up (LVEF-55%)

Figure 8: ECHO PSAX view on follow up (LVEF-55%)

Discussion

TCM is a syndrome characterized by transient LV dysfunction in the absence of angiographic evidence of significant obstructive coronary artery disease(CAD), most commonly due to a sudden emotional breakdown.[1] Postmenopausal women accounted for 82-100% of patients with an average age group of 62-75 years.[2]

The term "Takotsubo" is a Japanese term that means "octopus trap". The shape of the octopus trap is similar to the LV angiographic appearance seen in this disease. This disease is also known as "Transient apical ballooning syndrome" due to depressed mid and apical segments of the LV, and hyperkinesis of the basal walls.[2]

Iga *et al.* reported the first case in a patient of pheochromocytoma, with transient LV dysfunction which was reversible with characteristic Takotsubo appearance. They also noted high level of circulating catecholamines in the patient. In 1990, Sato *et al.* first described this reversible cardiomyopathy as Takotsubo. [3]

The diagnostic criteria as published in the European Journal of Heart Failure [Table 1] must be fulfilled to establish the diagnosis of TCM.[4]

1.	Transient regional wall motion abnormalities of LV or RV myocardium occur and are frequently, but not always, preceded by a stressful trigger (emotional or physical).
2.	The regional wall motion abnormalities usually extend beyond a single epicardial vascular distribution and often result in circumferential dysfunction of the ventricular segments involved.
3.	There is an absence of culprit atherosclerotic coronary artery disease, including acute plaque rupture, thrombus formation, and coronary dissection or other pathologic conditions, to explain the pattern of temporary LV dysfunction observed (e.g., hypertrophic cardiomyopathy, viral myocarditis).
4.	New and reversible ECG abnormalities (ST segment elevation, ST depression, left bundle branch block (LBBB), T-wave inversion, and/or QTc prolongation) are seen during the acute phase (first 3 months).
5.	Significantly elevated levels of serum natriuretic peptide (BNP or Nt-proBNP) are seen during the acute phase.
6.	A positive but relatively small elevation in cardiac troponin can be measured with a conventional assay (i.e., disparity between the troponin level and the amount of dysfunctional myocardium present).
7.	Recovery of ventricular systolic function is apparent on cardiac imaging at follow-up (3 to 6 months).

Table 1: Definition of Takotsubo Syndrome/ Cardiomyopathy according to the Position Statement From the Taskforce on Takotsubo Syndrome of the Heart failure Association of the European Society of Cardiology

The pathogenesis of this disorder is not well understood and the reason for postmenopausal women, LV mid and apical cavity being affected is not clear.[5] TCM occurs during times of enhanced sympathetic tone and can be precipitated by excessive endogenous or exogenous catecholamine stimulation of the myocardium, a condition that is also seen in cases of intracranial hemorrhage, ischemic stroke, headtrauma, pheochromocytoma, critically ill patients, and those who have undergone some surgical procedures.[6]

The etiology of TCM remains speculative. Proposed mechanisms include[7]:

- Multivessel coronary artery spasm
- Impaired cardiac microvascular function
- Endogenous catecholamine induced myocardial stunning and microinfarction

The most commonly discussed mechanism for TCM is stress-induced catecholamine release that causes myocardial toxicity and stunning of the myocardium. The apical parts of the heart have very high concentration of sympathetic receptors, which may explain why these excess catecholamines affect the apical segments more.[8,9]

Myocardial biopsy of TCM patients shows inflammation and contraction bands as compared to coagulation necrosis seen in acute MI.[9]

The most common clinical symptoms are acute retrosternal chest pain, dyspnoea, and syncope (75.9%, 46.9%, and 7.7% respectively). Some patients may develop heart failure, tachyarrhythmia and ventricular tachycardia or ventricular fibrillation, bradyarrhythmia, significant mitral regurgitation (MR), sudden cardiac arrest, and shock.[10]

ECG in TCM resembles that of ST- elevation myocardial infraction (STEMI). ECG findings in TCM includes ST segment elevation in anterior leads (43.7%), ST depression (7.7%), and T wave inversion, abnormal Q waves, and QT prolongation. A combination of absent Q waves, absent reciprocal ST changes, ST elevation in aVR and absence of ST elevation in V1 has a 91% sensitivity and specificity for TCM.[11,12]

ECHO in TCM exhibits different variants for hypokinesias in segments like apical type (most common, 81.7%), mid ventricular type (14.6%), focal type (1.5%), global type (rare).[13]

In a study by Budnik M *et al*, patients were found to have higher levels of BNP with slight elevation of Creatinine phosphokinase (CPK) and Troponin.[14] While coronary angiography may show no evidence of obstructive coronary artery disease, left ventriculogram is the best imaging modality for diagnosis of TCM. [15]

The right ventricle (RV) is also affected in some patients, being the most frequently affected segments: the apico-lateral, the antero-lateral, and the inferior segment. Improvement in right ventricular abnormalities can be seen in cardiac MRI study.[15] Hence, cardiac MRI is also useful tool to differentiate TCM from MI (Late Gadolinium Enhancement Subendocardial and Transmural) and Myocarditis (Patchy LGE).[16] Nuclear cardiac imaging is useful for the detection of viable myocardium and the functional abnormalities.[17] There is no specific treatment for LV dysfunction in TCM. Treating heart failure can normalize cardiac function within few weeks. Heart failure can be managed by oxygen supplementation, ventilation, diuretics, beta blockers and ACE inhibitors or Angiotensin II receptor blockers (ARBs). Hypotension after the initiation of ACE/ARB or diuretics has been reported in few case studies. This is due to dynamic LVOT obstruction. Anticoagulation with warfarin is indicated for persistent LV dysfunction to prevent LV thrombus.[9]

The prognosis of patients with TCM is generally excellent,[2] however some complications that can occur in early stage such as pulmonary edema, intraventricular pressure gradients, acute mitral regurgitation, right ventricular involvement with pleural effusion, intraventricular thrombi can result in stroke or arterial embolism, atrial fibrillation, malignant ventricular arrhythmias, and cardiogenic shock.[18]

References

1. Bybee KA, Prasad A. Stress-related Cardiomyopathy Syndromes. Circulation. 2008;118:397-409.
2. Zamir M. The Physics Of Coronary Blood Flow. USA: Springer Science and Business Media. 2005; p. 387.
3. Iga K, Gen H, Tomonaga G, *et al*. Reversible Left Ventricular Wall Motion Impairment Caused By Pheochromocytoma: A Case Report. Jpn Circ J.1989;53:813-8.
4. Lyon AR, Bossone E, Schneider B, *et al*: Current State Of Knowledge On Takotsubo Syndrome: A Position Statement From The Taskforce On Takotsubo Syndrome Of The Heart Failure Association Of The European Society Of Cardiology. Eur J Heart fail. 2016;18:8-27.
5. Sato H, Tateishi H, Uchida T. Takotsubo-type Cardiomyopathy Due To Multivessel Spasm. In: Kodama K, Haze K, Hon M (eds). Clinical Aspect of Myocardial Injury: From Ischemia to Heart Failure. Tokyo, Japan: Kagakuhyouronsha; 1990. pp. 56-64.
6. Kurowski V, Kaiser A, von Hof K, *et al*. Apical And Midventricular Transient Left Ventricular Dysfunction Syndrome (tako-tsubo Cardiomyopathy): Frequency, Mechanisms, And Prognosis. Chest. 2007;132:809-16.
7. Akashi YJ, Goldstein DS, Barbaro G, *et al*. Takotsubo Cardiomyopathy A New Form Of Acute, Reversible Heart Failure. Circulation. 2008;118:2754---62.
8. Redfors B, Shao Y, Lyon AR, *et al*. Diagnostic Criteria For Takotsubo Syndrome: A Call For Consensus. doi:10.1016/j.ijcard.2014.06.094.
9. Sharkey SW, Windenburg DC, Lesser JR, *et al*. Natural History And Expansive Clinical Profile Of Stress (tako-tsubo) Cardiomyopathy. J Am Coll Cardiol. 2010;55:333---41.
10. Templin C, Ghadri JR, Diekmann J, *et al*. Clinical Features And Outcomes Of Takotsubo (stress) Cardiomyopathy. N Engl J Med.2015;373:929.
11. Bybee KA, Motiei A, Syed IS, *et al*. Electrocardiography Cannot Reliably Differentiate Transient Left Ventricular Apical Ballooning Syndrome From Anterior ST-segment Elevation Myocardial Infarction. J Electrocardiol. 2007;40:38.e1-6.
12. Kosuge M, Ebina T, Hibi K, *et al*. Simple And Accurate Electrocardiographic Criteria To Differentiate Takotsubo Cardiomyopathy From Anterior Acute Myocardialinfarction. J Am Coll Cardiol. 2010;55(22):2514-6.
13. Igor M, Jasna K, Jovan P, *et al*. Right Ventricular Takotsubo Cardiomyopathy. JACC 2010;55(16).
14. Budnik M, Kochanowski J, Piatkowski R, *et al*. Simple Markers Can Distinguish Takotsubo Cardiomyopathy From St Segment Elevation Myocardial Infarction. IntJ Cardiol. 2016;219:417-20.
15. Templin C, Ghadri JR, Diekmann J, *et al*. Clinical Features And Outcomes Of Takotsubo (stress) Cardiomyopathy. N Engl J Med. 2015;373:929.

16. Eitel I, von Knobelsdorff-Brenkenhoff F, Bernhardt P, *et al*. Clinical Characteristics And Cardiovascular Magnetic Resonance Findings In Stress (Takotsubo) Cardiomyopathy. JAMA. 2011;306:277.

17. Bossone E, Lyon A, Citro R, *et al*. Takotsubo Cardiomyopathy: An Integrated Multi-imaging Approach. Eur Heart J ---- Cardiovasc Imaging. 2014;15:366---77.

18. Merchant EE, Johnson SW, Nguyen P, *et al.* Takotsubo Cardiomyopathy: A Case Series And Review Of The Literature. West JEM. 2008;9:104-11.

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Demonstration Of Urinoma Formation Due To Pyelosinus Reflux After Forniceal Rupture Secondary To Obstructing Ureteric Calculus

Dr Masum Shah (MD)
Dr Ronak Patel (MD, DNB, FRCR)
Dr Yash Patel (MD)

Case Report

Abstract

Urinomas are retroperitoneal urinary fluid collections that are diagnosed by urography studies in which contrast leak and resultant fluid collection are demonstrated. They are rare and have diverse etiologies with one of them being acute obstructive uropathy leading to renal backflow of urine many times causing forniceal rupture and pyelosinus reflux. A case of urinoma formation presented to the radiology department of KD Hospital with acute obstructing ureteric calculus and was diagnosed using CT urography.

Introduction

Urinomas are urine collections usually found in the retroperitoneum, most commonly in the perirenal space, as a consequence of renal tract leakage caused by urinary tract trauma, post-instrumentation, or rarely secondary to urinary obstruction.[1-3] They are a rare phenomenon and while they may be occult initially, they may lead to complications like abscess formation, hydronephrosis, electrolyte instability, and a progressive loss of renal function if not diagnosed and managed promptly.[3-5]

Case

A 45-year-old male patient came to radiology department of KD Hospital for CT urography to evaluate right-sided flank plain. CT urography revealed acute obstructive uropathy due to calculus at the level of iliac vessel crossing in right mid-ureter with resultant back pressure changes in form of mild hydronephrosis and proximal hydroureter. There was delayed excretion of contrast in right proximal ureter with persistent dense right sided nephrogram as well as absence of passage of contrast beyond the level of calculus in distal ureter. This had resulted in the development of urinoma in the right periureteric region [Fig1,2,3].

Figure 1: 3D VR (3 dimension volume rendered) projection of CT urography shows pyelosinus reflux with urinoma formation on right side.

Figure 2: 3D volume rendered projection of CT urography showing pyelosinus reflux with urinoma formation on right side with ureteric calculus (postero-anterior view)

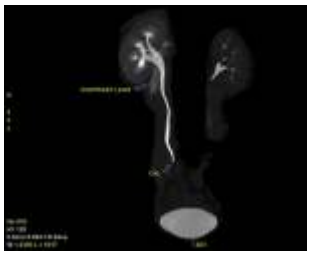

Figure 3: Coronal maximum intensity projection (MIP) image of CT urography shows pyelosinus reflux with urinoma formation on right side with ureteric calculus

Discussion

Urinomas are encapsulated urine collections formed due to urinary leakage and extravasation into the retroperitoneum. It can cause lipolysis of the surrounding fat with resultant encapsulation of urine, forming a urinoma.[1-3] The most common cause for urinoma is trauma.[3,4] Renal injury, surgical operation, or obstruction are some other causes for formation of urinoma.[2]

While the etiology of urinoma may be either obstructive or non-obstructive,[1,3,4] radiologists play a key role in diagnosing urine leaks and determining their cause and extent. Contrast material enhanced computed tomography (CT) with delayed imaging, CT cystography, retrograde urethrography, intravenous pyelography, antegrade and retrograde pyelography, renal scintigraphy, and imaging-guided needle aspiration are the diagnostic imaging choices available.[4] CT Urography is the best modality to detect it.[1]

Clinical features include malaise, vague abdominal pain, weight loss, and a palpable mass.[2] Patients usually present with acute ureteral obstruction symptoms and they may report relief when the rupture of renal fornix occurs. A similar case demonstrating pyelosinus reflux secondary to forniceal rupture as a result of backflow due to acute obstructing uretric calculus has been reported.[6]

On CT, a urinoma shows water attenuation, similar to simple fluid elsewhere in the body. Urine leakage is usually directly demonstrated on contrast-enhanced studies on the excretory phase due to direct contrast extravasation from the urinary tract.[1] Contrast extravasates outside of the collecting system, into the surrounding retroperitoneal tissues.

In acute ureteral obstruction the kidney resorbs urine as a compensatory mechanism to allow continued excretion.[3,6] This resorption of urine occurs due to the increasing pressure in the renal pelvis during the acute phase of urinary obstruction and we will see it on CT as a retrograde flow of contrast material out of the intrarenal collecting system. This retrograde flow of contrast material is termed "pyelorenal backflow", and occurs via one of five pathway: pyelovenous, pyelolymphatic, pyelotubular, pyelointerstitial or pyelosinus. [6]

Among all of these phenomena, only pyelocanalicular or pyelotubular backflow does not require the rupture of the fornix and thus can be interpreted as a genuine backflow in the fullest sense of the word. Unlike pyelotubular, the rest of the refluxes can only occur after the rupture of the renal fornix.

Pyelosinusal backflow is the most common form of pyelorenal backflow. The contrast enters the renal sinus and tracks along infundibulae, renal pelvis, and proximal ureter. Besides, it can also obscure the collecting system. This form of backflow is responsible for many of the urinomas seen frequently. A similar case demonstrating pyelosinus reflux secondary to forniceal rupture as a result of backflow due to acute obstructing uretric calculus has been presented in the European Congress of Radiology 2016.[6]

Early detection of pyelosinusal backflow/reflux, which is the reason for urinoma formation is very important for successful management.

References

1. Gayer G, Zissin R, Apter S, Garniek A, Ramon J, Kots E *et al*. Urinomas Caused By Ureteral Injuries: CT Appearance. Abdominal Imaging. 2002;27(1):88-92.
2. McInerney D, Jones A, Roylance J. Urinoma. Clinical Radiology. 1977;28(3):345-351.
3. Gautam R, Shaikh T, Attarde N, Gupta S, Wani J, Ghosalkar M *et al*. Urinoma: A Rare Complication Of Ureteral Calculi. International Journal Of Research In Medical Sciences. 2015;:2440-2442.
4. Titton R, Gervais D, Hahn P, Harisinghani M, Arellano R, Mueller P. Urine Leaks And Urinomas: Diagnosis And Imaging-guided Intervention. RadioGraphics. 2003;23(5):1133-1147.
5. Goldwasser J, Wahdat R, Espinosa J, Lucerna A. Urinoma: Prompt Diagnosis And Treatment Can Prevent Abscess Formation, Hydronephrosis, And A Progressive Loss Of Renal Function. Case Reports in Emergency Medicine. 2018;2018:1-3.
6. Murgiondo A, Ugarte A, Mancisidor K, Eraso V, Usabiaga V, Etxeberria A *et al*. Pyelorenal Backflow Seen On CT Urography: Everything You Need To Know. European Society of Radiology. 2016. p. 21.

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Persistent Tracheostomy Stoma Closure Within 2 Weeks Duration

Dr Deepak Chhatbar (MD, DLO)

Case Report

Abstract

A case of incomplete closure of tracheostomy stoma leading to difficulty in speech presented to our hospital. After thorough history and investigations, stoma closure was performed. At 2 weeks post procedure, the stoma had closed completely with recovery of patient's speech functions.

Case

A 32 year old male patient, known case of epilepsia partialis continua (EPC), viral encephalitis, traumatic brain injury (TBI), residual sequelae, axonal motor neuropathy, presented to ENT department with complaints of difficulty in speaking since 3 months. Patient had a history of fall in January 2018 for which he was operated elsewhere. In view of his greivious condition, a tracheostomy was performed, which was removed in August 2018. On examination, it was found that the opening was not a persistent tracheostomy wound, or a granulation tissue at the site of tracheal tube insertion, or an infection; rather it was persistent tracheostomy stoma. There were no other systemic comorbidities. The blood investigations were within normal limits.

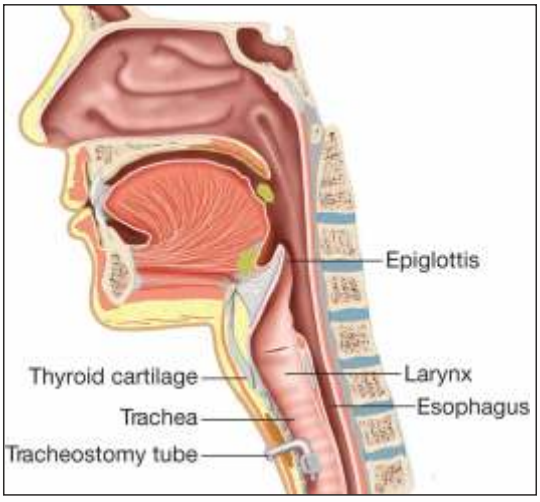

Figure: Placement of tracheostomy tube

The patient was treated with antibiotics, anticonvulsants, and supportive medications. Area of stoma was cleaned with betadine and spirit, stomal margins were freshened and uplifted and sterile dressing was given. The patient was discharged and asked to come for repeat dressings and follow-up.

The patient was followed-up on the 3rd day and the 6th day post discharge. The wound was healing well. The stoma had completely closed on the 15th post-operative day and the patient had restored his speech functions. There was no seepage/leakage from the wound site.

Discussion

Tracheostomy is indicated in patients to keep the airway patent. Some of the common complications of tracheostomy include haemorrhage, infection, obstruction, tube displacement, pneumothorax, atelectasis, subcutaneous emphysema, aspiration, tracheal stenosis, tracheo-oesophageal fistula, persistent stoma, aerophagy, apnoea, cardiac arrhythmia, severe hypotension, cardiac arrest, or difficult decannulation.[1]

Persistent stoma is a rare complication that may arise after removal of tracheostomy tube.[2] This may be the result of failure of tracheal stoma to close after removal of the tube after prolonged utilization of the stoma resulting in epithelialization over the scar between the skin and tracheal mucosa. This lesion can cause unsatisfactory phonation, increased susceptibility to respiratory infection, and skin irritation around the stoma. Proper technique for stoma closure can correct this lesion.[1]

Some of the surgical methods include use of muscle flaps and skin flaps which act as a soft tissue between the trachea and skin with satisfactory cosmetic and functional results.[3] Techniques involving use of a turnover flap with medialization of fibroadipose tissue during surgery, followed by additional closure with an advancement skin flap have been documented in literature.[2,4]

Generally, a case of persistent stoma takes around 2-3 months for complete healing and tracheoplasty may be needed. Around 8-10 dressings may be needed before closure and complete healing. However, in this case,

the clear identification of the cause for non-closure of the stoma helped in performing the correct procedure leading to rapid healing and closure of the stoma within 2-3 weeks time.

References

1. Mehta A, Chamyal P. Tracheostomy Complications And Their Management. Medical Journal Armed Forces India. 1999;55(3):197-200.
2. Shen K, Mathisen D. Management Of Persistent Tracheal Stoma. Chest Surgery Clinics of North America. 2003;13(2):369-373.
3. Bishop J, Bostwick J, Nahai F. Persistent Tracheostomy Stoma. The American Journal of Surgery. 1980;140(5):709-710.
4. Eliashar R, Sichel J, Eliachar I. A New Surgical Technique For Primary Closure Of Long-term Tracheostomy. Otolaryngology-Head and Neck Surgery. 2005;132(1):115-118.

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- Impedance Audiometry Interacoustics
- Otoacoustic Emission (OAE)
- Brainstem Evoked Response Audiometry (BERA)

Carcinoma Prostate: An Overview

Dr Shrenik Shah (MS, MCh)

Original Article

Introduction

Prostate is a gland that makes a white coloured fluid that mixes with sperm and other fluids to make semen. Prostate cancer is the second most common cancer and the sixth leading cause of cancer deaths worldwide. [1] Prostate cancer is rarely diagnosed in men less than 50 years of age. Both environmental and genetic are contributing factors in causing prostate cancer. Family history has been found to play an important role [Table 1].

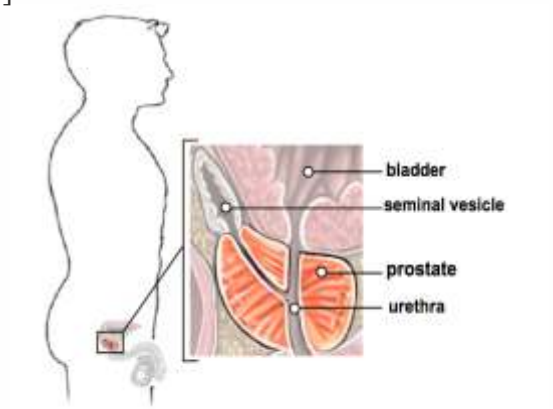

Figure 1: General anatomy of prostate

FAMILY HISTORY	RELATIVE RISK	95% CONFIDENCE INTERVAL
None	1	
Father affected	2.17	1.90-2.49
Brother affected	3.37	2.97-3.83
First-degree family member affected, age<65 yr at diagnosis	3.34	2.64-4.23
>2 first-degree relatives affected	5.08	3.31-7.79
Second-degree relative affected	1.68	1.07-2.64

Table 1: Familial incidence of CA Prostate (Campbell 11th Edition)

Clinical Presentation

Most prostate cancers are asymptomatic or may cause symptoms like:

- Frequency (both in day and night) , or weak stream
- Blood in urine or semen
- Pain in the hips, back (spine), chest (ribs)

Screening and Diagnosis

The screening for prostate cancer should begin at 50 years of age in men with average risk factors and at 40 years of age in men having higher risk factors like family history.[2]

Patients with serum prostate specific antigen (S.PSA) values below 4 ng/ml may be followed , whereas patients with S.PSA values in Grey Zone of 4-10 ng / ml need further evaluation with imaging like multiparametric magnetic resonance imaging (MP-MRI).[3] In patients with S.PSA values more than 10 ng/ml biopsy needs to be done which is an office based procedure.

For imaging MP-MRI is modality of choice. For bone metastasis bone scan and prostate specific membrane antigen (PSMA) PET is done

Treatment

Active surveillance should be used in highly motivated patients understanding the risks and benefits. Laproscopic and robotics radical prostatectomy are standard approaches and currently are the best treatment available.[4,5]

Radiation therapy has a role to play in local recurrence and also as a salvage therapy. Potential side effects of radiation therapy need to be kept in mind.

The purpose of hormonal therapy is to decrease levels of androgens or stop them from affecting the prostate . It is used in inoperable cancers , recurrent cancers , concomitantly with radiation therapy and in high risk cancers as adjuvant therapy.[6]

Follow Up

Most doctors recommend 3-6 months follow up for first 5 years followed by at least yearly with S.PSA and clinical examination.

Our Experience

In our experience we have operated 238 laparoscopic radical prostatectomies with results rivalling the world standard. A 77 years old male was diagnosed with CA prostate, 45 cc prostate, Gleason 9 (4+5), voiding difficulty, and history of ischaemic heart disease. MRI suggested hypointense lesion on left side with left seminal vesicle involvement. Laparoscopic radical prostatectomy was then performed at KD Hospital. Patient is doing well and is on regular follow up .

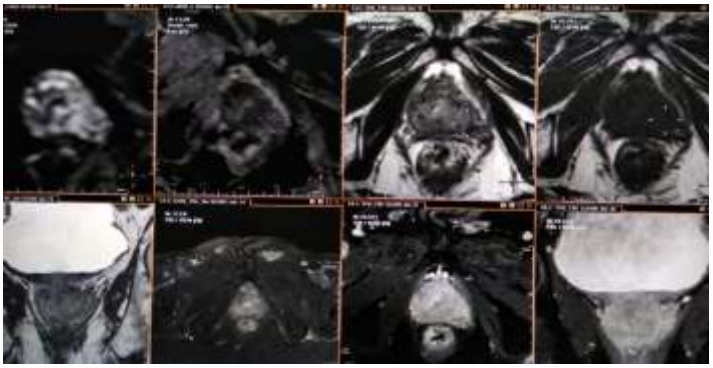

Figure 2: MP-MRI

Figure 3: Specimen

Figure 4: Port Site

As per world literature[4,5] we strongly recommend laparoscopic radical prostatectomy as a treatment of choice for prostate cancer in localized, locally advanced and even limited metastasis. All other modalities need to be considered and individualized on case to case basis.

References

1. Campbell 11th edition : Prostate Cancer Epidemiology.
2. Eeles R, Goh C, Castro E, *et al*. The Genetic Epidemiology Of Prostate Cancer And Its Clinical Implications. Nat Rev Urol 2014;11:18
3. Welch HG, Albertsen PC. Prostate Cancer Diagnosis And Treatment After The Introduction Of Prostate-specific Antigen Screening: 1986-2005. J Natl Cancer Inst 2009;101:1325–9.
4. Montorsi F, Wilson TG, Rosen RC, *et al*. Best Practices In Robot-assisted Radical Prostatectomy: Recommendations Of The Pasadena Consensus Panel. Eur Urol 2012;62(3):368–81.
5. Briganti A, Joniau S, Gontero P, *et al*. Identifying The Best Candidate For Radical Prostatectomy Among Patients With High-risk Prostate Cancer. Eur Urol 2012;61:584–92
6. Prostate Cancer Trialists' Collaborative Group. Maximum Androgen Blockade In Advanced Prostate Cancer: An Overview Of The Randomised Trials. Lancet 2000;355:1491–8.

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Extracorporeal Shock Wave Lithotripsy - Benefits In Renal And Upper Ureteric Stone

Dr Shrenik Shah (MS, MCh)

Original Article

Introduction

Kidney stones or renal calculi are hard deposits made of minerals and salts that form inside your kidneys. Stones affect any part of urinary tract from kidneys to bladder [Fig 1]. The lifetime prevalence of renal calculi is 1 to 15%.[1] Men are more commonly affected than women. Stone occurrence is rare before 20 years of age with peak incidence in 20-40 years of age. Stone formation is also associated with occupation, climate, racial differences, geographical areas, obesity, diabetes amongst various factors. Renal stones vary in composition with most common constituent being calcium [Table 1].

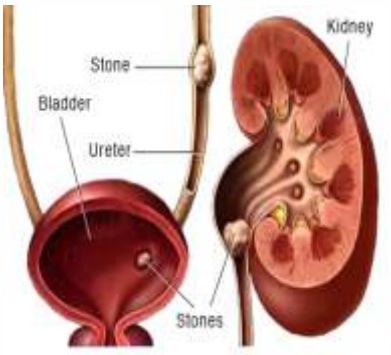

Figure 1: Sites of ureteric stones

STONE COMPOSITION	OCCURRENCE (%)
CALCIUM-CONTAINING STONES	
Calcium oxalate	60
Hydroxy apatite	20
Brushite	2
NON-CALCIUM-CONTAINING STONES	
Uric acid	7
Struvite	7
Cystine	1-3
Triamterene	<1
Silica	<1
2,8-Dihydroxyadenine	<1

Table 1: Types of renal stones (Campbell 11th Edition)

Symptoms And Evaluation

Patients present with backpain radiating to the groin. They may have fever, vomiting, hematuria, and pyuria as presenting symptoms. Investigations includes blood workup, urine routine microscopy (R/M), urine culture sensitivity (C/S), 24 hour urine work up followed by various imaging modalities like ultrasonography (USG) kidney, ureter, bladder (KUB), X-ray KUB, intravenous pyelography (IVP), non-contrast computer tomography (NCCT) KUB, and CT urography [Fig 2].

Figure 2: Radiographic images of renal calculi

Treatment

Various treatment modalities are available with the basic principle of removing stone. Medical management is often an adjunct. Minimally invasive modalities available to treat renal stones are shock wave lithotripsy (SWL), uretroscopic lithotripsy (URSL), percutaneous nephrolithotripsy (PCNL).

SWL is noninvasive and less morbid procedure with low complication rate even for ureteric calculi as compared to URS.[2,3] Extracorporeal Shock Wave Lithotripsy (ESWL) has been considered as first line treatment for small renal stones. European Association of Urology recommends SWL for all renal stones less than 2 cm.[4,5] For these stones SWL achieves stone free rates upto 90%. For stones, 1-2 cm, not located in lower pole, SWL is recommended as first line therapy. Even stones located in lower pole can have reasonable success with favourable factors. [Fig 3] Common adverse effects associated with ESWL include flank petechiae, hematuria, and passage of stone fragments with associated renal colic.[6]

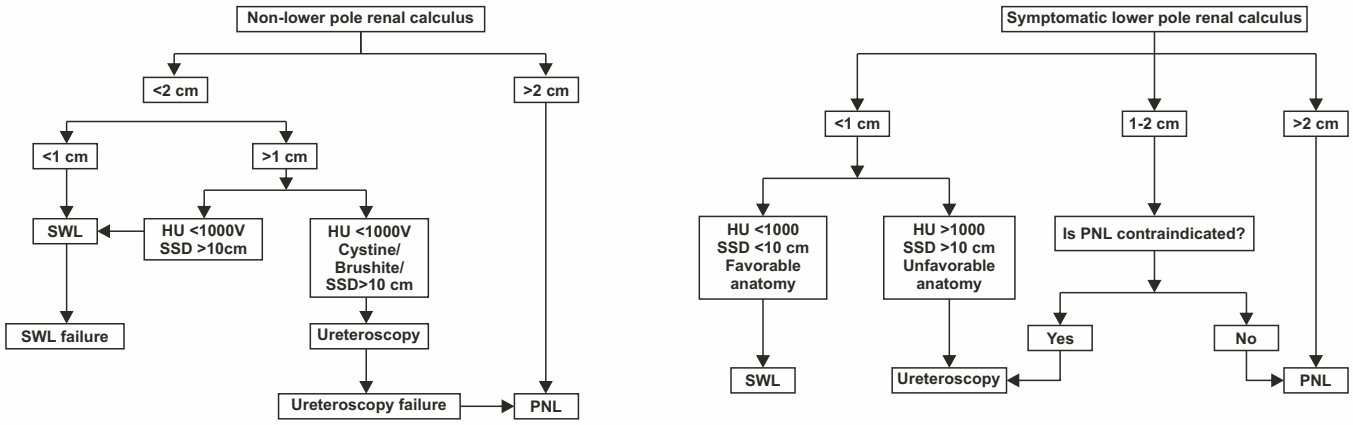

Figure 3: Flowchart showing management of renal calculus (Campbell 11th Edition)

Dornier Lithotripter

At KD Hospital, we are using the electromagnetic Dornier Lithotripter which gives best results which are at par with world standards. This machine has better stone clearance rates than other available machines. It ensures lower re-treatment rates with enhanced patient comfort and minimum side effects.[7]

Our Experience

Our team of urologists have performed 98 ESWL cases at this centre with good stone clearance rates, of which 73 patients (74.4%) had complete clearance in 1st sitting, 21 patients (21.4%) had complete clearance in 2nd sitting, and 4 patients (4.08%) in the 3rd sitting. Only two patients required auxiliary procedure in form of URS.

References

1. Campbell 11th edition : Epidemiology Of Stones.
2. Pearle MS, Nadler R, Bercowsky E, *et al.* Prospective Randomized Trial Comparing Shock Wave Lithotripsy And Ureteroscopy For Management Of Distal Ureteral Calculi. J Urol 2001;166:1255–60.
3. Preminger GM, Tiselius HG, Assimos DG, *et al.* 2007 Guideline For The Management Of Ureteral Calculi. J Urol 2007;178:2418–34.
4. Turk C, Knoll T, Petrik A, *et al*; European Association Of Urology (eau) Guidelines Office. European Association of Urology guidelines on urolithiasis. 28th ed. Milan: EAU Annual Congress; 2013.
5. Abe T, Akakura K, Kawaguchi M, *et al*. Outcomes Of Shockwave Lithotripsy For Upper Urinary-tract Stones: A Large-scale Study At A Single Institution. J Endourol 2005;19(7):768–73
6. Albala DM, Assimos DG, Clayman RV, *et al*. Lower Pole I: A Prospective Randomized Trial Of Extracorporeal Shock Wave Lithotripsy And Percutaneous Nephrolithotomy For Lower Pole Nephrolithiasis-initial Results. J Urol 2001;166(6):2072–80.
7. Bianchi G, Marega D, Knez R, *et al*. Comparison Of An Electromagnetic And An Electrohydraulic Lithotripter: Efficacy, Pain And Complications. Arch Ital Urol Androl 2018;90(3):169-171.

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Dornier Lithotripter

Basics Of Nerve Conduction Studies And Electromyography: A Technical Review For Appropriate Use In Daily Practice

Dr Ruchir Divatia (MD, DM)

Review Article

Introduction

Nerve conduction studies (NCS) and electromyography (EMG) are important diagnostic tools in a neurologist's armamentarium and are being used with increasing frequency due to the availability of cheaper Indian-made machines in past two decades. However, there is general lack of awareness and confusion regarding their appropriate use in daily practice. The purpose of this short technical review is to put these in perspective for better patient referral process and also help technologists to understand the fundamentals.

Brief history

NCS/EMG helps in the diagnosis of neuromuscular diseases by providing a physiologic assessment of peripheral nerve, muscle, neuromuscular junction, dorsal root ganglion, and anterior horn cell.[1] They are sometimes collectively referred to as electrodiagnostic studies (EDX). The scientific basis for these studies lies in the fact that nerves are good conductors of electricity, a discovery made accidently by Italian scientist Luigi Galvani way back in 1771.[2] Later in 1929, Adrian devised a method to record a single motor unit potential by connecting a concentric needle electrode to an amplifier and loud speaker. The field greatly benefited from invention of equipment that was capable of amplifying small bio-electric currents in the early 20th century. Significant advances were later made during and after World War II, which provided a large patient population with nerve injuries to study.[2]

Basic components of NCS/EMG machine

The basic components of NCS/EMG recording machines include electrodes, filter, amplifier, average display and stimulator. Electrodes are made up of a metal and can be used as surface electrodes or needle electrodes. Surface electrodes are of three types – 1. Active (recording) 2. Reference and 3. Ground. Needle electrodes are used for performing EMG. Filter is a device, which selectively restricts frequency domain of a signal and can be modified to reject or to allow lower or higher frequency signals. Amplifier is required to amplify biological signals which are very small. An action potential generated in nervous tissue passes from electrode into the amplifier and returns to the patient through ground electrode. Displays are nowadays computer based digital video displays. Stimulators are used for nerve conduction studies and depending on the type of study different current strengths are used.[2]

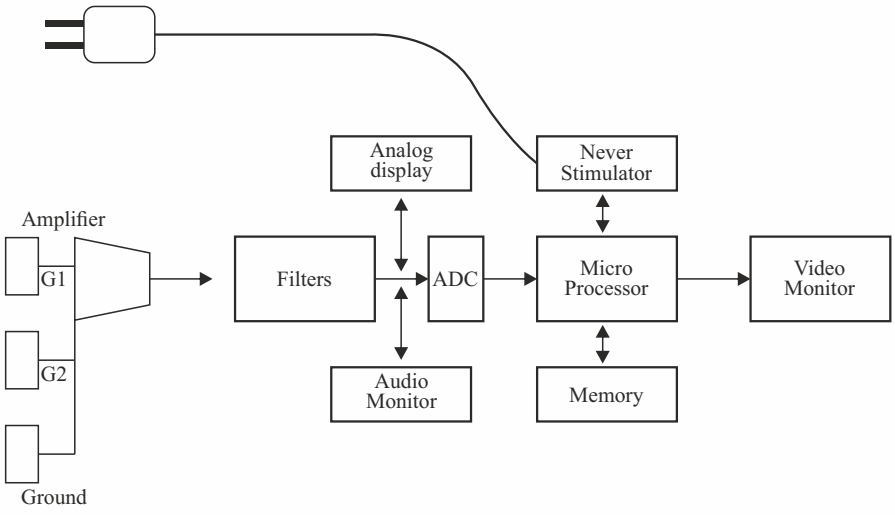

Figure 1: Major components of electrodiagnostic equipment. ADC = Analogue to digital converter

Principles and technique of performing NCS/EMG

The various parameters elicited during these studies include:

1.Motor and sensory conduction studies
2.F waves and H-reflexes
3.Needle electromyography

Motor and sensory conduction studies record amplitude, duration, area, latency and conduction velocity of different motor and sensory nerves. Motor /mixed nerve is stimulated at least at two points along it's course and the various parameters mentioned above are measured by the software inbuilt. The technologist's job here is to put the markers and measure the distance between two points accurately.[3]

Sensory conduction studies are measured orthodromically (distal to proximal) or antidromically (proximal to distal). The technologist here should be careful not to use a higher current to avoid stimulation of motor axon and elicit motor conduction, which would result in erroneous interpretation of motor amplitude as sensory amplitude.

F waves and H reflexes examine entire nerve segments including proximal portions of the motor and sensory nerve. They are also termed "late responses" particularly useful in diagnosing radiculopathies and plexopathies.[3]

Repetitive nerve stimulation study is used to demonstrate decrement response in-patient suspected with neuromuscular junction disorders. This is again a technically demanding procedure as any movement by the technologist or patient would result in error.

Needle EMG is the most challenging component of EDX, which requires knowledge of muscle anatomy and physiology, sound technique as well as patient support. The neurologist performing these studies should first educate the patient about the procedure and instruct him/her on how to contract and relax. Combination of impatient neurologist and tense patient is bound to result in errors and lead to wrong diagnosis. Insertional activity, spontaneous activity, voluntary motor unit action potentials and maximal volitional activity are various parameters evaluated with needle EMG.[3]

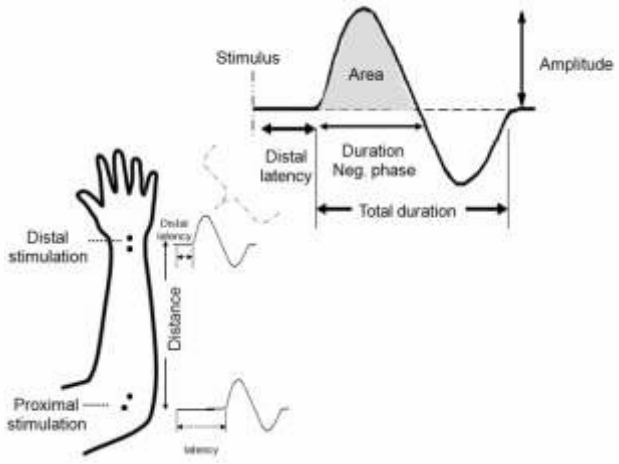

Figure 2: Basic technique for nerve conduction study and graph of a compound motor action potential

How to refer a patient for NCS/EMG?

A clinician should think hard when requesting NCS/EMG for a patient. Beside the reasons that should determine our use of all investigations there are two particular issues that relate to NCS/EMG[4]:

1. NCS/EMG may be slightly uncomfortable and in worst cases painful for the patient despite the best efforts by the technologist and neurologist
2. NCS/EMG are expensive and may consume around an hour or more of technologist's and neurologist's time

One should be clear about two facts before referring and performing NCS/EMG:

1. These tests do not replace a careful history and examination of patient
2. NCS/EMG are an extension of clinical assessment

NCS/EMG often complement clinical examination and be thought as tools to "probe" nerves and muscles in a different manner. If one cannot localize the lesion on clinical examination alone it may not be possible to gain additional information from NCS/EMG.[4]

Challenges particular to NCS/EMG as an investigation

1. NCS/EMG is not a single investigation but an evolutionary one in which a series of tests can be applied to a clinical problem. The initial tests done are dictated by the clinical presentation but are also adjusted later based on the results of the other tests as the examination proceeds.[4]

   For example, an elderly lady having left foot drop referred for NCS/EMG with clinical diagnosis of left peroneal neuropathy and found to have reduced amplitude from left peroneal nerve with normal latency, velocity and normal superficial peroneal sensory nerve, requires further evaluation with needle EMG studies to rule out radiculopathy, plexopathy or even anterior horn cell disease. Similar situations require continuous modification of approach while performing the test.
2. These tests are significantly operator dependent, particularly EMG component that is like an "online" detection of visual and auditory information requiring considerable skill and expertise of the operator. Performance of EMG is often likened to a "fishing" expedition where only experience can teach the "feel to pick up abnormalities".
3. NCS/EMG are not just normal or abnormal but there is significant range of normality, which can vary, and also there are different degrees of abnormality.[4] These have to be compared "externally" with normative data as well "internally" with opposite limb of the same patient, mandating evaluation of clinically asymptomatic limb also.

Conclusion

NCS/EMG are able to change/prove/disprove a clinical diagnosis and make a significant difference in patient management if used as a continuum of clinical examination, performed by skilled and experienced technologist and neurologist on a cooperative patient.

References

1. Aminoff M J. Aminoff's Electrodiagnosis In Clinical Neurology. 6th ed. : Elsevier; 2012.
2. Misra UK, Kalita J. Clinical Neurophysiology, 2nd ed. : ; 2006.
3. Katirji B. Clinical Electromyography, Philadelphia: W.B. Saunders; May 2002. (Neurologic clinics; vol 20).
4. Fuller G. How To Get The Most Out Of Nerve Conduction Studies And Electromyography. Journal of Neurology, Neurosurgery & Psychiatry. 2005;76(suppl_2):ii41-ii46.

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Advanced 32 channel digital EEG machine (with portability and video recording facility)

4 channel EMG-NCS machine (with portability)

KD Hospital in NEWS

PLANT-A-THON

Plant for a greener planet

Mother Nature needs some care to grow and spread greenery. With The Times of India Plantathon, presented by KD Hospital, Ahmedabadis got a chance to contribute by planting more and more trees

'I WILL QUIT SMOKING' THEY SAID

K.D. હોસ્પિટલ અને ઇમિગ્રેશન બ્યૂરો દ્વારા એરપોર્ટમાં ફ્રી હેલ્થ ચેકઅપ કેમ્પ યોજાયો

કે.ડી. હોસ્પિટલ ઇમિગ્રેશન બ્યૂરો એસોસિએશનના સંયુક્ત ઉપક્રમે અમદાવાદ ઇન્ટરનેશનલ એરપોર્ટમાં ફ્રી હેલ્થ મેગા ચેકઅપનું આયોજન કરવામાં આવ્યું હતું, જેમાં ઇમિગ્રેશન, એરલાઇન્સ, એરપોર્ટ ઓથોરિટી સ્ટાફ, અને સી.આઈ.એસ.એફ. સ્ટાફના અંદાજે ૨૫૭ જેટલા અધિકારીઓનું ફ્રી ચેકઅપ કરવામાં આવ્યું હતું કે.ડી. હોસ્પિટલ અમદાવાદની સૌપ્રથમ હોસ્પિટલ છે કે જેને એરપોર્ટ ઓથોરિટી દ્વારા ફ્રી ચેકઅપ કેમ્પની પરવાનગી અપાઈ હતી.

વિવેકાનંદનગરમાં મેડિકલ કેમ્પ યોજાયો

અમદાવાદ : વિવેકાનંદનગર ખાતે મેડિકલ કેમ્પનું આયોજન રવિવારના રોજ કરાયું હતું. તેમાં 100થી વધુ લોકો પ્રાથમિક મેડિકલ તપાસ માટે ઉપસ્થિત રહ્યા હતાં. વિવિધ ડોક્ટરોએ પણ તેમાં સેવા આપી હતી.

વિરમગામ હોસ્પિટલમાં મેડિકલ કેમ્પ યોજાયો

વિરમગામ: લાયન્સ ક્લબ ઓફ વિરમગામ સંચાલિત ICCU Hospital ના નિષ્ણાત ડો.જે.જે.મેમણ દ્વારા ગ્રામ દિવસ 12,13 અને 14 ઓગસ્ટના ફ્રી નિદાન કેમ્પનું આયોજન કરવામાં આવ્યું છે તેમજ કે.ડી. હોસ્પિટલ અમદાવાદ દ્વારા ફ્રી ડાયાલિટીસ ચેક અપ કેમ્પ નું આયોજન કરવામાં આવેલ છે. 16 ઓગસ્ટથી રાબેતા મુજબ ICCU માં ખૂબ જ રાહત દરે માત્ર 30 રૂપીયામાં એક દિવસની દવા સાથે OPD તપાસવામાં આવશે. આ કેમ્પમાં પ્રમુખ અશ્વિન વોરા, સેક્રેટરી મહેશ ખમાર, ઝોન ચેરમેન અર્પણ હોસિયા, વાઇસ ચેરમેન ચુનુસ માસ્ટર સહિતના મોટી સંખ્યામાં લાયન મેમ્બરો હાજર રહ્યા હતા.

bazaar BUZZ

એરપોર્ટ પર હેલ્થ મેગા ચેકઅપ કેમ્પ યોજાયો

કે.ડી. હોસ્પિટલ અને ઇમીગ્રેશન બ્યૂરો એસોસિએશનના સંયુક્ત ઉપક્રમે અમદાવાદ ઇન્ટરનેશનલ એરપોર્ટ પર ફ્રી હેલ્થ મેગા ચેકઅપ કેમ્પનું આયોજન કરવામાં આવ્યું હતું. જેમાં ઇમીગ્રેશન, એરલાઇન્સ, એરપોર્ટ ઓથોરિટી સ્ટાફ અને CISF સ્ટાફના અંદાજે 257 જેટલા અધિકારીઓનું ફ્રી ચેકઅપ કરવામાં આવ્યું હતું. સૌ પ્રથમ વખત આ રીતે ફ્રી ચેકઅપ કેમ્પ યોજાયો હતો.

વિવેકાનંદ નગરમાં મેડિકલ કેમ્પનું આયોજન

અમદાવાદ : કે.ડી.હોસ્પિટલનાં સહયોગથી રવિવારે સવારે 9.30થી 12.30 સુધી વિનામૂલ્યે મેગા મેડિકલ કેમ્પનું આયોજન કરવામાં આવ્યું છે. આ કેમ્પ વિવેકાનંદનગર સંસ્કાર સ્કૂલ જૈન દેરાસર, હાથીજણ ખાતે રાખવામાં આવ્યો છે. તેવું રિપોર્ટર અતુલભાઈ પટેલે જણાવ્યું હતું.

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નવગુજરાત Health

અમદાવાદ | શુક્રવાર, 30 નવેમ્બર, 2018 | 3

ગરીબ દર્દીઓને પણ ઈન્ટરનેશનલ સ્ટાન્ડર્ડની સુવિધા આપતી કે ડી હોસ્પિટલ

તસવીરો: પંકજ ભુકન

નવગુજરાત Health

રાજ્યની આર્થિક રાજધાની ગણાતા આપણું અમદાવાદ શહેર સ્વાસ્થ્ય સુવિધાની દૃષ્ટીએ પણ રાજ્યમાં અગ્રેસર છે. શહેરની અનેક સરકારી અને ખાનગી હોસ્પિટલમાં સારવાર લેવા ફક્ત શહેરમાંથી જ નહીં આજુબાજુના ગામડાં, શહેરો અને અન્ય રાજ્યોમાંથી પણ હજારો લોકો આવતાં હોય છે. હાલના સમયમાં મોટાભાગે એવું જોવા મળે છે કે ગરીબ દર્દીઓ સરકારી હોસ્પિટલમાં સારવાર લે છે અને જેમને ખાનગી હોસ્પિટલના ખર્ચા પોસાય કે ન છૂટકે ત્યાં દાખલ થવું પડે તેવા દર્દીઓ ખાનગી હોસ્પિટલમાં સારવાર લેતાં હોય છે. પરંતુ હવે આ સમસ્યાનું સમાધાન મળ્યું હોય તેમ અમદાવાદમાં કે ડી હોસ્પિટલ નામની ઈન્ટરનેશનલ સ્ટાન્ડર્ડ પરાવતી ચેરિટેબલ હોસ્પિટલ શરૂ થઈ છે જે તમામ વર્ગના લોકોને ખાનગી હોસ્પિટલની તમામ સુવિધાઓ અન્ય હોસ્પિટલથી લગભગ અડધા ખર્ચે પૂરી પાડે છે.

હોસ્પિટલ અને તેમાં ઉપલબ્ધ સુવિધાઓ અંગે માહિતી આપતાં કે ડી હોસ્પિટલનાં મેનેજિંગ ડિરેક્ટર ડો અદિત દેસાઈએ જણાવ્યું કે તેમના પિતા તથા પ્રખ્યાત પુરોલોજિસ્ટ ડો કેતન દેસાઈનું એક સ્વપ્ન હતું કે તમામ લોકોને ઈન્ટરનેશનલ સ્ટાન્ડર્ડ પ્રમાણેની હોસ્પિટલ સુવિધા આપવી અને તે પણ તમામ લોકોને પોસાય તેવા ખર્ચે અને તેમના આ સપનાને સાકાર કરવા શ્રી હરિહર મહારાજ કામધેનુ ગૌસેવાશ્રમ ચાર્મિક ટ્રસ્ટના નેજા હેઠળ કે ડી હોસ્પિટલ (કુસુમ ધીરજલાલ હોસ્પિટલ) શરૂ કરવામાં આવી. અમદાવાદના વૈષ્ણોદેવી સર્કલ પાસે આવેલી આ મલ્ટી/સુપર સ્પેશિયાલિટી હોસ્પટલ છ એકરમાં વિસ્તરેલ છે.

અન્યોથી વધુ પથારી પરાવતી આ હોસ્પટલની ખાસિયત એ છે કે ચાલીસથી વધુ સુપર સ્પેશિયાલિટીની સુવિધા એક છત નીચે જ જે-તે વિષયના નિષ્ણાંત તબીબો સાથે ઉપલબ્ધ છે.ડો અદિતએ વધુમાં જણાવ્યું કે, આ એક એવી હોસ્પિટલ છે જેમાં સમાજની સેવાના ઉદ્દેશથી અન્ય કોર્પોરેટ હોસ્પિટલ કરતાં વધુ સુવિધા તથા સ્ટાન્ડર્ડ ખૂબ જ ઓછા દરે આપવામાં આવે છે ઓપીડી પેશન્ટ્સ માટેનો ચાર્જ પણ અન્ય કોર્પોરેટ હોસ્પિટલ્સ કરતાં ઓછો રાખવામાં આવ્યો છે. ફુલ ટાઈમ ડોક્ટર્સની સાથોસાથ પેરામેડિકલ સ્ટાફ પણ ટ્રેઈનિંગ પામેલો તથા અહીંનો અનુભવ પરાવતો છે, આ એક એવો પ્રયાસ છે જેના થકી દર્દીને ઉત્તમોત્તમ સારવાર આપી શકાય. આ ઉપરાંત ડોક્ટરો તથા અન્ય સ્ટાફની ટ્રેઈનિંગ તથા ઓપરેશન થિયેટરમાંથી લાઈવ વિડીયો માટે 220 સીટ્સ પરાવતું ઓડિટોરિયમ પણ બનાવવામાં આવ્યું છે.

ડો અદિત દેસાઈ, એમડી, કે ડી હોસ્પિટલ

Scope of Services

એનેસ્થેસિયોલોજી	નિયોનેટોલોજી & પિડિયાટ્રિક્સ
ઓર્થોપેડિક્સ & સ્પોર્ટ્સ મેડિસિન	નેફ્રોલોજી & ડાયાલિસીસ સેન્ટર
ઓપ્થેલ્મિક સર્જરી	ન્યુરોલોજી & સ્ટ્રોક સેન્ટર
કાર્ડિયોલોજી	ન્યુરો સર્જરી
ક્રિટીકલ ન્યુરોલોજી	ઓબ્સ્ટેટ્રિક્સ (ઓબ્સ્ટેટ્રીક સર્જરી)
ક્રિટીકલ કેર & ઈમર્જન્સિ કેર	ઓન્કોલોજી
ડેન્ટીસ્ટ્રી & ઈમ્પ્લાન્ટોલોજી	ઓર્થોપેડિક્સ & ટ્રોમા
ડર્મેટોલોજી & કોસ્મેટોલોજી	ગેસ્ટ્રોલ ડિસીસેસ
ઈન્ટરનલ મેડિસિન	જેનિ ક્લિનિક
ઈ.એન.ટી	ડિટોક્સોલોજી & ડિસ્ટિલેટેશન
એન્ડોક્રિનોલોજી & ડાયાબિટીક ક્લિનિક	પ્લાસ્ટીક & રીકન્સ્ટ્રક્ટીવ સર્જરી
ગેસ્ટ્રોએન્ટેરોલોજી	પ્રિવેન્ટીવ હેલ્થ ચેકઅપ
જનરલ મેડિસિન	સાઈકોલોજી
જનરલ સર્જરી	ફાર્મોકોલોજી
જેસ્ટ્રો-ઈન્ટેસ્ટાઈન & હિપેટોબિલિયરી સર્જરી	રેડિયોલોજી
ત્વચારોલોજી & કોસ્મેટોલોજી	રેસ્પ્યુરોલોજી
ટોક્સિકોલોજી ક્લિનિક	લીવર મેડિસિન
ઈમર્જન્સી એન્ડ ટ્રોમા સેન્ટર	વેસ્કયુલર સર્જરી
કોર્પોરેટ્રી મેડિસિન	સાયકોલોજી
મેડિકલ ઓન્કોલોજી & હેમેટોલોજી	યુરોલોજી
	વસ્કયુલર & થોરાસિક સર્જરી

Events held by KD Hospital

As Healthcare Partner in Night Marathon to fight against drug abuse


As Healthcare Partner in Pink Concert - Women's Only Music Concert



As Healthcare Partner with Radio Mirchi and Times of India in Plant-a-thon


Health Screening at Vatsalya Senior citizen


Associated with 70th Annual Conference of IMA Gujarat State Branch, GIMACON 2018, Himmatnagar

Superwings Preschool health screening



Zebar School health screening



World Cardiac day event at Sintex Industries



Vijapur TB Hospital camp



Sardarnagar camp



Ambavadi Health screening camp in association with Lions Club

Bhaner village camp

Chikari village camp

Kukarwada camp

Maninagar camp

Patient Speaks

As I was not well, I took appointment from the hospital and received good treatment from the medical team. As my medical condition did not improve, I was admitted to the hospital for two days. I received excellent medical care from all those involved in my healthcare. The physicians and support staff were also very kind and helpful. All of this aids one's recovery. Whilst no one wants to be in a hospital, my time here was actually good. Thank you everyone.

- William Smith

I am highly satisfied with the hospital consultation, management, and treatments (both medical and surgical). The hip replacement surgery done here is praiseworthy. I highly appreciate the floor staffs, doctors (medical officers), and attendants for their services and the real care they exhibit for the patient's condition while performing their duties. I would like to add that the food services from the canteen are also appreciable and whatever and whenever I demanded I got in a warm, positive, polite, and timely manner. Also the floor PRO is very supportive, jolly nature guy and he willingly helped anytime I needed his help and solved query about food.

- Rubbeya Abeid

After reaching KD Hospital, we got information about bariatric surgery from the bariatric surgery department for the first time. We were pleased by the behaviour and the way the process was explained to us and agreed to go for the surgery after complete understanding. We admitted Mrs Santosh Mardia and the surgery was incidentally performed by the bariatric team on the day of her birthday. The surgery was commendable and the nursing staff and other attending staff behaved very well and provided all type of cooperation. The stay at the hospital, cleanliness of the room, and complete support and cooperation of the staff is really appreciated. We thank the team and staff of KD Hospital for giving a new life to her on her birthday.

- Mahendra Mardia

I brought my wife, Mrs Shantaben Makwana, to KD Hospital and experienced very good treatment and management. We did not face any kind of problem in hospital and all staff is very kind and helpful. The medical officer and nursing staff took proper care of the patient. The treatment we got at the neurosurgery department was also commendable. As we stay in the vicinity of the hospital, we feel proud to have this type of hospital near our residence. Hospital cleanliness is taken well care of, with special attention to the food quality. All services and medications were provided timely by the attending staff. We just admire the "patient first" attitude shown by KD Hospital.

- Rajivbhai Makwana

My daughter, Shivani J Singh, was admitted in KD Hospital and we found the staff to be very cooperative and helpful. We thank them from the core of our heart for their support and services. All the attendants, doctors, housekeeping provided a very homely environment and care. I would once again like to thank the doctors in the gynaecology and paediatric departments at KD Hospital for providing their expert care. Our experience at KD Hospital was over and above of what we had heard about the services. We wish the best for KD Hospital from God so the hospital prospers and continues to provide quality services to all those who need them.

- Badan Singh

I am highly grateful to the cardiology department at KD Hospital for the excellent treatment provided. The hospital management is excellent, the food provided to patient is also good. We really liked the behaviour of doctors and nursing staff. It is because of KD Hospital that I am alive. This hospital is a saviour for me and because of KD Hospital I got a new life.

- Suresh G Barochiya

We are highly thankful to the pulmonology department at KD Hospital for improving the condition of my father, Mr Rajenderbhai G. Patel. The condition of my father was very bad and we had lost all hope. My father has actually got a new life with efforts of the doctors and staff at KD Hospital. I wholeheartedly thank them for everything.

- Niyati Patel

The doctors and staff in the orthopaedic department are very cooperative. Cleaning and hygiene maintenance is done on regular basis. All Doctors and staff come for patients rounds on regular basis. All services are best. We can undoubtedly say that KD Hospital is No. 1 hospital in the city.

- Amrutbhai M Patel

We found the paediatric department at KD Hospital to be the best. We are lucky to have met the doctor here. Thank you for being the “guardian angel” for my son, Anshul Karnik, on multiple occasions. We are indebted to you for your kindness, concern, humanity, and “patient first” attitude. You are the perfect blend of compassion, wisdom, knowledge, and professionalism. The doctors and staff in the department are an asset to this hospital. We are highly thankful KD Hospital nursing and support staff for everything.

- Pallavi V Karnik

The emergency services in the hospital are really good. The staff is highly cooperative. The rooms are hygienic and sufficient quantity of food is provided to the patients. Timely medication and health check ups are done. It is remarkable that the staff is friendly with the patients and relatives too. The food and services provided in the canteen is also good and of high quality. The hospital is also maintained very well.

- Arunaben N Doshi

We are highly grateful to orthopaedic department at KD Hospital where I underwent knee replacement surgery. We got very good support here. The team of joint replacement surgeons was very supportive and we are thankful to them for minimal pain surgery. Starting from the admission to discharge, we have got good service from all staff. Not specifically one or two, I am actually heartily thankful to all staff of KD Hospital. All resident doctors, sweepers, security standing near lift, attendants, physiotherapists, and all other staff have supported us very well. Whenever need arises, we would again like to visit KD Hospital only and we will suggest the same to friends and relatives.

- Dharmishtha H Patel

I was admitted to the hospital as I was suffering with dengue fever. I was well received and cared for in the ICU by ICU staff and prompt attention was given by the critical care department. On being shifted to the isolated ward, all staff including nursing, housekeeping, and attending staff took adequate care. Immediate references were made to the cardiology and gastrology department when needed. The concerned department responded without any delay and I was looked after without any inconvenience. Overall, the services were good and the departments and staff were very caring.

- Harita K Tamakuwala

I personally feel KD staff and caregivers are very punctual and perform their job nicely. The management and maintenance team also keep a watch on the patient and related staff. Staff is very punctual and regular in taking care of the patient's diet, clothes, reports, and other maintenance activities. The experience with all the doctors has been great and I would specifically thank the doctors in the gastrosurgery department for the best treatment they provided. Thanks to the dietician for providing time to time service and care.

- Jay Gajjar

I appreciate the efforts taken by all the staff members right from admission to discharge. We were received and treated by the gastrointestinal surgery department very well. I have already recommended the hospital to all my friends and relatives who need medical support. Now the challenges are to maintain the same decorum and spirit for all the new patients who will visit here in coming days and I am sure KD Hospital will do the same and meet its standards. The way we have been taken care of here was commendable and much beyond our expectation. We are all praise for the hospital and staff.

- Jaya Jha

KD Hospital was suggested to us by one of our doctor friend for bariatric surgery. After coming to KD Hospital and meeting the staff and doctors, we were received and treated like family members. We found that everyone here works together to provide care and help to each other. Everyone including administration, doctor, nursing staff, security and all other staff are very helpful. We are thankful to you for providing all the services under one roof. We hope that the way doctors explain and interact with patients remains the same. We wish to get same kind of services from KD in the future also.

- Kalpanaben Nayi

We really appreciate the great care we received for the treatment of our father, Mr Kanubhai Sheth, who had undergone surgery for fracture of femur in the orthopaedic surgery department. All the doctors, staff nurses, attendants, housekeeping, and canteen staff treated us with love, kindness, and compassion. The staff nurses are very punctual in giving medicines on time. Attendants are great help and they all work with great compassion. We are deeply indebted to all the doctors, physiotherapists, dieticians, and staff for the great care they provided to our father. Thank you very much for all the help and support.

- Chintan Sheth and Tejaswini Sheth

I would like to thank the doctors and staff in ophthalmology department for providing this delightful & absolutely wonderful experience of LASIK Surgery. I would also like to thank all staff members of KD Hospital for their amazing contribution & valuable support. I am carrying with me wonderful memorable moments of KD Hospital.

- Krushil P Kadiya

I am a resident of Pali district and my wife, Marunisa Kureshi, has been ill since 1997. I took her for treatment to Jaipur, Jodhpur, Ajmer, Beawar, Udaipur, and all other places where referred but I was not satisfied by the treatment provided at any of these places. Her condition was also not improving. Then I was referred to KD Hospital where I not only got good orthopaedic treatment, but also very good and supportive staff, which is not available anywhere else in India according to me. My family is highly grateful and indebted to KD Hospital. In future, I wish every city has a hospital like KD Hospital and staff similar to the staff present here.

- Jaffar Hussain

I found the hospital to be very good as all the workers and coworkers behave with good hospitality manners. The management is very nice and all things are managed timely. The environment provided is very nice and homely. I would also like to thank the gasteroenterologist, general surgeon, gastrosurgeon, and floor manager. May God always be with you as you help patients. Thanks.

- Mukeshkumar R Soni

The staff and the doctors here were very knowledgeable. The environment was clean and hygienic. Both doctors and standard/support staff in the gynaecology department were very humanitarian. Enough facility and services were available and treatment was very good. I will recommend this hospital to my family and friends also.

- Nidhi S Patel

I would like to heartily thank the management at KD Hospital for the excellent services provided. Not only the nurses, staff, and doctors in the orthopaedic surgery department, but also all other staff in the hospital are very good and we received very good service. The behaviour of all staff towards the patient, Ms Prabhavati V Bhatt, was very nice and positive. The diet plan and facilities provided are also outstanding. In future also whenever we will need any kind of treatment, we will come to KD Hospital only as all work is done properly and in a hygienic way here. I am grateful to all staff, doctors, and nurses on the floor for their kind services.

- Vaishali S Dwivedi

Honestly, I cannot give the name of any one doctor or nurse as each and every member, be it from any section, nursing and care, housekeeping, floor managers, dieticians, or the general physicians in the internal medicine department - everyone is so nice and courteous. I was admitted in another private multispeciality hospital last year and perceived that nothing could be better than this. Now as I admitted my father here when he was ill, I was a bit reluctant initially, but then I decided to admit him here because of the proximity from my residence. Thanks for proving that my decision was really very wise.

- DR Sehgal

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