Venous Access Devices

Prashant Balvant Kerkar*, Pradeep T.**

Cancer treatment is multimodality treatment with chemotherapy as a very important tool. For the purpose of chemotherapy venous access is most important. Use of venous access devices is ubiquitous in health care. Establishing and maintaining reliable access is a priority in managing a patient. Early access planning prevents IV related complications and negative outcomes for patient.

Venous Access Devices are

Peripheral

Most appropriate device for short term therapies (less than 5 days) that are nonirritating

Central

appropriate when

- Drugs have pH greater than 9.0 or less than 5.0, osmolality greater than 500 mOsm
- Drugs or fluids are known irritants
- Parenteral nutrition with dextrose concentration greater than 10%.
- IV inotropes,
- Vesicants.

Central Venous Devices

Non-tunneled

Inserted by percutaneous stick into the internal jugular, subclavian. femoral or upper arm veins. Temporary triple lumen (Fig. 1).

Tunneled

The catheter is tunneled under the skin to a vein in the neck or chest. A cuff near the exit site anchors the catheter in place. Powerline, hickmann and broviac.

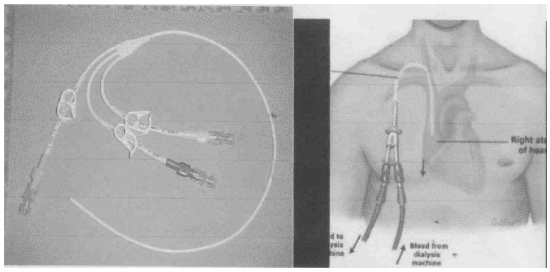

Fig. 1

Implanted

Surgically inserted under the skin in the upper chest or the arm and appears as a bump under the skin. Mediport, portacath

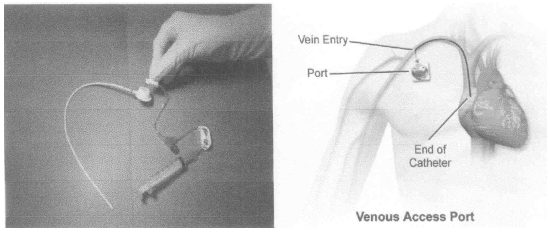

Fig. 2

Appropriate VAD Selection

Minimises patient discomfort, morbidity and mortality

Decreases health care costs associated with delays of therapy and enhances therapeutic benefits for patients.

Type of access device most appropriate for the patient depends on,

Duration of therapy $\leq$ 5-7 days -

*Surgical Oncology (TMH), Surgical Oncologist, Hepato-Pancreatico-Biliary and Gastrointestinal, Laparoscopic Oncosurgeon, **Senior Resident, Dept of Surgical Oncology, Bombay Hospital and Medical Research Center, 12 New Marine Lines, Mumbai - 400 020.

peripheral IV

> 7 days < 2 weeks (in house patients)

temporary CVAD

1-6 weeks - PICC

> 6 weeks - Tunneled or Implanted

Characteristics of the infusates - pH < 5 or pH > 9

Osmolality >600

Caustic or vesicant medications

Available insertion sites and existing co-morbidities

Complications of venous access devices

Phlebitis, cellulitis

Air embolism

Bleeding

Thrombosis

Infection, sepsis

Infiltration / extravasation

Device occlusion

Catheter damage / rupture

Pneumothorax, haemothorax

Peptic ulcer disease

The rapidly declining prevalence of Helicobacter pylori infection and widespread use of potent anti-secretory drugs means peptic ulcer disease has become substantially less prevalent than it was two decades ago.

Peptic ulcers not associated with H pylori infection or the use of non-steroidal anti-inflammatory drugs are now also imposing substantial diagnostic and therapeutic challenges.

Bleeding, which manifests as melena or haematemesis, can occur without any warning symptoms in almost half of patients. Hospital admissions for peptic ulcer bleeding have declined steadily worldwide, but the case fatality rate remains stable at 5-10%. Perforation typically presents with sudden onset of intense pain in the upper abdomen. Dependent on age and comorbidity, mortality can be as high as 20%.

Since H pylori is the cause of most types of peptic ulcer disease, a test-and-treat strategy with a non-invasive test (eg. urea breath and stool antigen tests) to exclude infection has been advocated in patients younger than 50-55 years who non-investigated dyspepsia and no alarming symptoms in geographical regions where gastric cancer is uncommon and the prevalence of H pylori infection is greater than 20%. In older patients, upper gastrointestinal endoscopy is the recommended test to exclude or confirm the disease.

For rescue therapy, levofloxacin-containing triple therapy (PPI, levofloxacin, and amoxicillin) achieves eradication rates of 74-81% as a second-line therapy in areas with low (<10%) quinolone resistance.

A bismuth-containing quadruple therapy is an effective second-line therapy after failure of standard triple therapies, with eradication rates of 77-93%.

All these strategies are now recommended to be used for 14 days.

When culture of H pylori is not available, or when at least three recommended options have been unsuccessful, rifabutin-based triple therapy (PPI, rifabutin, and armoxicillin) for 10 days is an effective rescue option.

There is growing interest in the use of probiotics as an adjuvant therapy to increase H pylori eradication rates and reduce antibiotic-related adverse events, although further studies are needed.

Angel Lanas, Francis K L Chan, The Lancet, 2017, Vol 390, 613-617