

Management of Mediastinal Mass and Superior vena Caval Syndrome, Radiation Oncologist Perspective!

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Abstract: Causes of superior vena caval syndrome is due to obstruction of superior vena cava in mediastinum leads to development of superior vena caval syndrome, Benign or Malignant Mediastinal masses can develop from structure that are located in mediastinum during development, as well as from metastasis of Malignancies that arise elsewhere in the body, the approach to a patient with a mediastinal mass shall be reviewed in this article as well as the approach of radiation oncologist its investigation and treatment shall be described, In addition brief summary of most common causes of mediastinal mass coming in oncology outpatient department shall be described.

Keywords: Mediastinal mass, Superior vena caval syndrome, Malignant

1. Discussion

Superior vena cava (SVC) is formed by confluence of right and left brachiocephalic veins it courses along the right middle mediastinum with trachea and ascending aorta on its left and drains into right atrium of heart, compression of superior vena cava leads to multiple signs and symptoms in the patients but surely breathlessness among them is being most common symptoms sometimes life threatening conditions.

Causes of Superior vena cava (SVC) Syndrome:

a) Malignant causes:

Lung cancers (most common causes), Lymphoma, Neuroblastoma, Mediastinal Non Seminomas Germ Cell tumors (NSGCT), Thymoma, Mediastinal lymphadenopathy.

b) Benign causes:

Catheter induce SVC obstruction is being commonest benign cause, Retrosternal Goiter, Histoplasmosis, Coccidiomycosis, Blastomycosis, Aortic Aneurism.

Among lung carcinoma Small cell carcinoma is the commonest cause 60 to 70% cases present as SVC syndrome followed by lymphoma.

Pathophysiology of SVC

Enlarge lymphnode as well as Primary tumor in mediastinum may cause compression of superior vena cava sometimes furthermore leads to thrombosis within the lumen of SVC, SVC classified in four groups

Type-1: Partial obstruction with patency of azygus vein blood flow.

Type-2: Near complete obstruction of SVC with patency and antegrade flow in azygus vein.

Type-3: Complete obstruction of SVC with reversal of blood flow in azygus vein.

Type-4: Complete obstruction of svc as well as azygus vein and development of chest wall collaterals which is clinically evident.

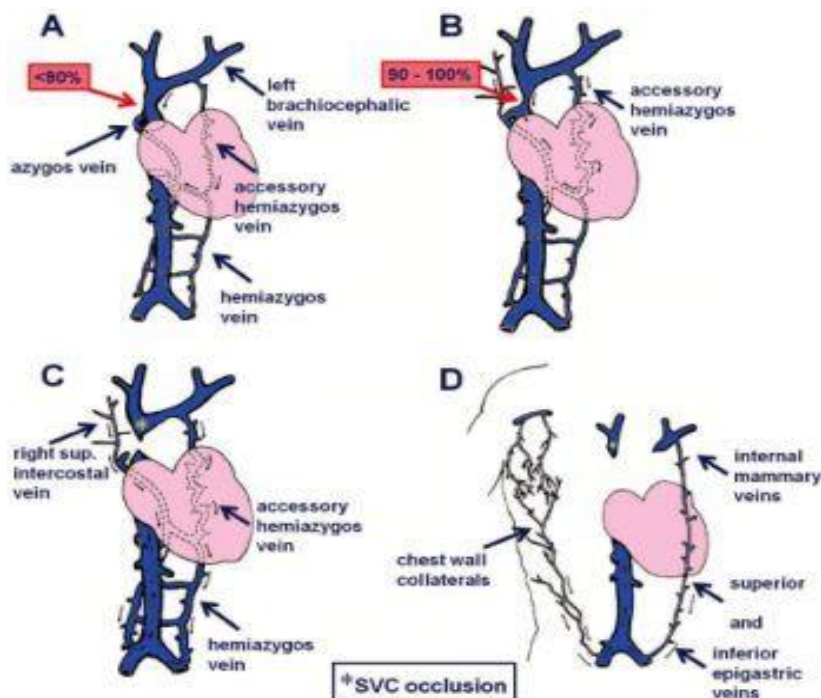


Figure 1: Types of SVC

Clinical features of SVC: Complains of Dysopnea, facial puffiness, haemoptosis, dilated over veins chest wall seen as veins engorgement, further rise of veins pressure in SVC leads to increase intracranial pressure.

2. Investigations

Chest x- ray shows, mediastinal widening, paranchymal mass. CECT Thorax indicates mediastinal lymphadenopathy, primaray mass lesion, as well as invasion of superior vena cava.

Treatment in the light of Radiation oncology:

Radiotherapy found effective in malignant cause of SVC but limitations of Radiotherapy is when there is thrombosis in SVC, radiotherapy decreases the mass but due to thrombus in SVC reduces the advantages of radiotherapy, usual radiation dose as palliative is 20Grey in 5 fractions recommended Radiation portals covers upper limit T-4 Vertebra to T-9 Vertebra but ideally one should get wire marks on patients and get it confirm by CT Simulator for lateral extension of field fied size usually comes 12×12 cm size.



Figure 2: Radiotherapy planning for mediastinal mass imaging of CT Simulator

Prophylactic heparization with 5000unit 6hrly given for 2 weeks for better results in order to dissolve the thrombus in SVC, 1gm/m² cyclophosphamide iv can be use in emergency.If thrombosis of vein SVC present than stenting percutaneous implantation of self expending stent in to

stenosis or occluded area of SVC can provide dramatic response to the patients.

References

- [1] Carlens E. Mediastinoscopy: a method for inspection and tissue biopsy in the superior mediastinum. *Chest* 1959;36:343–352
- [2] McNeill TM, Chamberlain JM. Diagnostic anterior mediastinotomy. *Ann Thorac Surg* 1966; 2:532–539
- [3] Rendina EA. Comparative merits of thoracoscopy, mediastinoscopy and mediastinotomy for the mediastinal biopsy. *Ann Thorac Surg* 1994; 57:992–995
- [4] Bousamra M II, Hassler GB, Patterson GA, et al. A comparative study of thoracoscopic vs removal of benign neurogenic mediastinal tumors. *Chest* 1996; 109:1461–1465
- [5] Hazelrigg SR, Landreneau RJ, Mack MJ, et al. Thoracoscopic resection of mediastinal cysts. *Ann Thorac Surg* 1993; 56:659–660
- [6] Horita K, Sakao Y, Itoh T. Excision of a recurrent pericardial cyst using video-assisted thoracic surgery. *Chest* 1998; 114:1203–1204
- [7] Sugarbaker D. Thoracoscopy. in the management of anterior mediastinal masses. *Ann Thorac Surg* 1993; 56:653–656
- [8] Capoferri M, Furrer M, Ris HB. Surgical diagnosis and therapy in patients with mediastinal space-occupying lesions: a retrospective analysis of 223 interventions with special reference to long-term course. *Swiss Surg* 1998; 4:121–128