

# Management of Neuroendocrine Tumor with Carcinoid Heart Disease and Liver Metastases: Multidisciplinary Approach

## Background and proposes

Heart is frequently involved in oncological processes, either by direct tumor existence/activity or secondary to antitumor treatments. This case exemplified how cardio-oncologists, being part of multidisciplinary team, reach a consensus management, key to success.

## Case description



- 46 years-old female, no medical history.
- Clinical course: 4-5 months with progressive dyspnea, occasional palpitations and hot flushes.
- Physical examination: **Systolic murmur tricuspid area.**

### Transthoracic echocardiogram

- Pulmonary and tricuspid valves: **Retracted/thickened veils.**
- **Free tricuspid regurgitation.** Double mild pulmonary valve lesions.
- **Severe right ventricle (RV) dilatation:** volume overload signs.

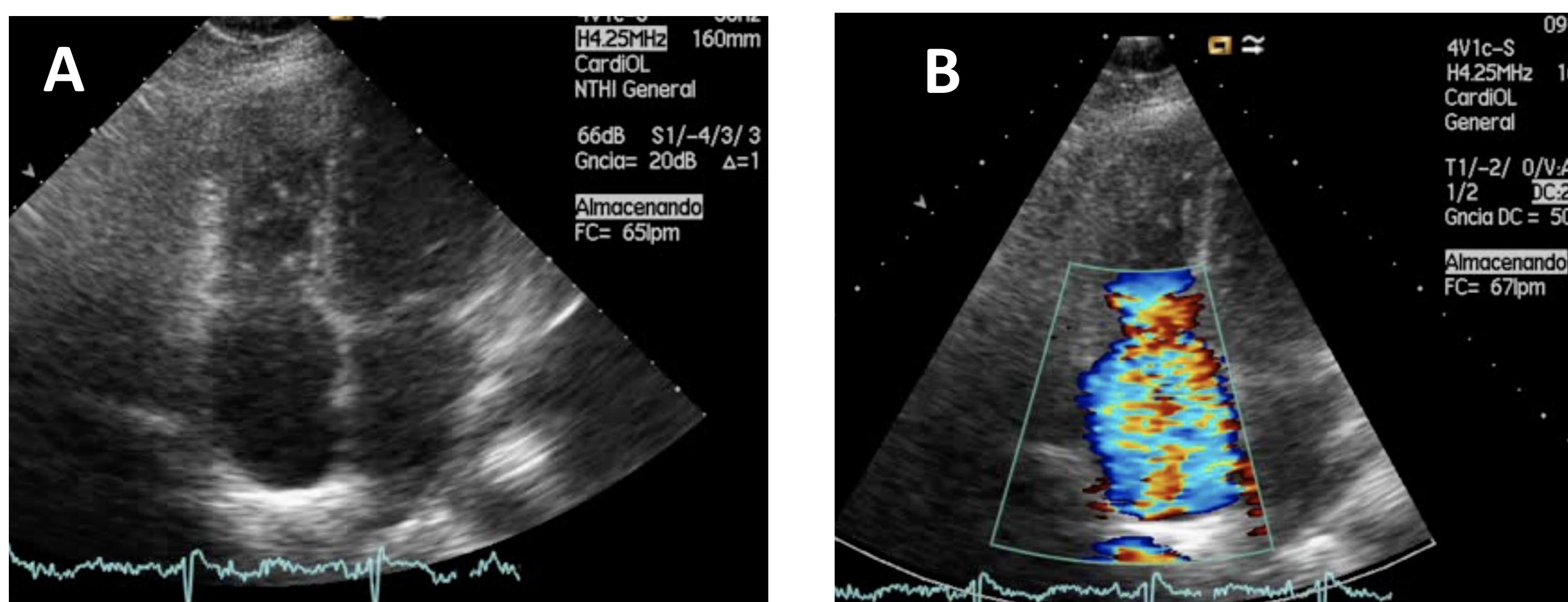


Image 1. A: Echocardiogram apical 2-chambers view ( RV-focused,) showed tricuspid affection. Image B: Free severe regurgitation in Doppler color flow.

### Cardiac magnetic resonance:

- Severe tricuspid regurgitation (**RF 43%, coaptation defect 9mm.**)
- Mild dilated right ventricle (**198cc / i 108cc/m2.**)
- Ventricular septum rectification.
- **LVFE / RVFE (63%) preserved.**

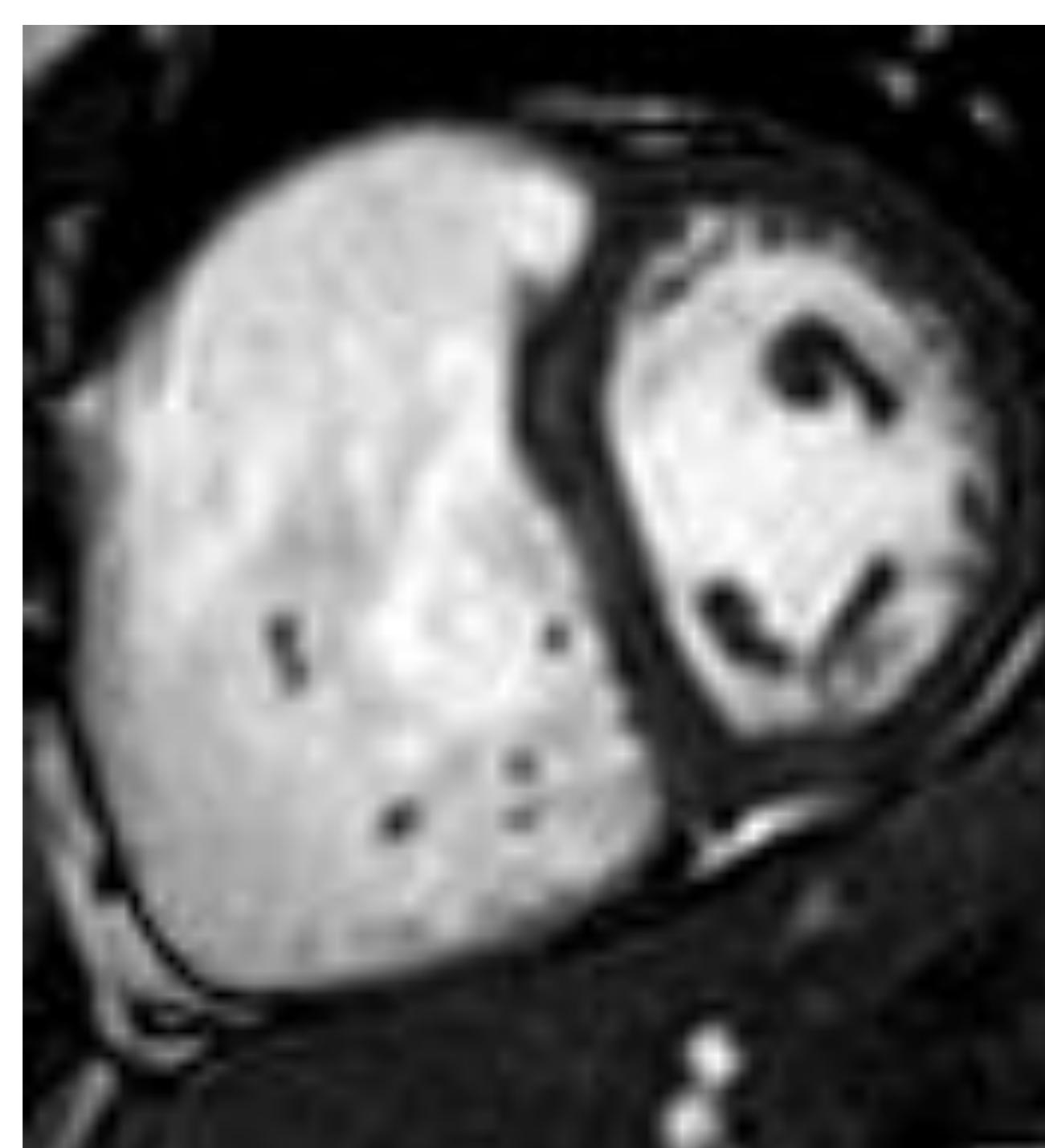


Image 2: Short-axis cine sequence (mid-ventricle), VD overloaded, with interventricular septum rectified.

## Suspicion of carcinoid syndrome

**Biochemical test:**  
↑ Chromogranin-A: 593 ng/ml [0.0 -100]  
↑ 5-hydroxyindoleacetic: 20.85 mg/24h [2-9].

**CT-Body:**  
Primary tumor in ileum + liver metastases.

**PET-CT:**  
↑ Metabolic activity.

**OctreoScan:**  
↑ Somatostatin's receptors.

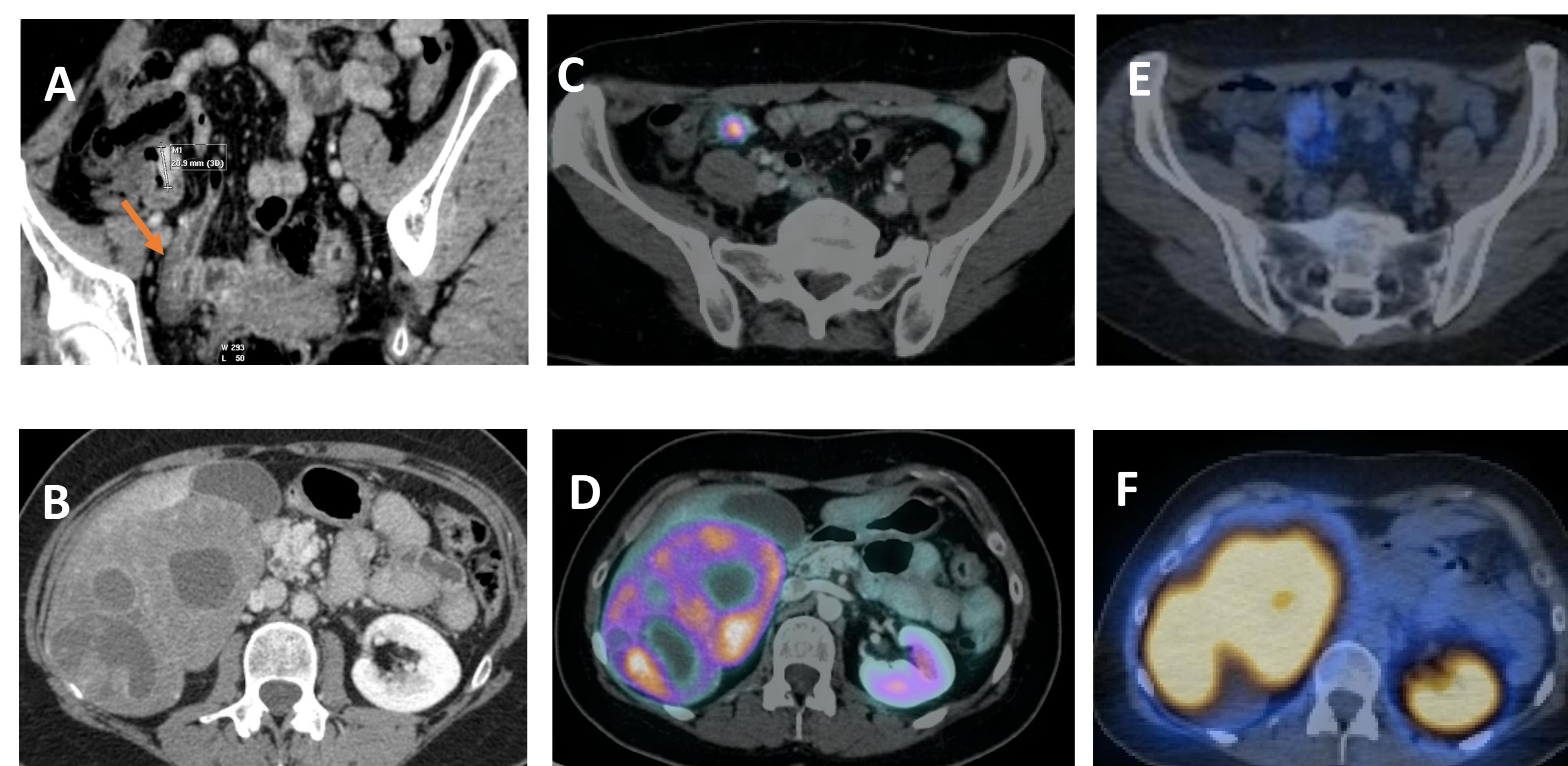


Image 3. A: Coronal CT, primary tumour in distal ileum (red arrow) . Image B: Axial CT cut multiple liver metastases. . Axial PET-CT, high activity in primary tumour (C) and liver metastases (D) and Octreoscan somatostatin receptors in primary tumour (E) and liver metastases (F).

**Liver biopsy:**  
Well-differentiated low-grade neuroendocrine tumor (LGNET) (Ki67 1%)

**DIAGNOSIS:**  
**CARCINOID SYNDROME SECONDARY TO GASTROINTESTINAL CARCINOID TUMOR.**

## CARCINOID SINDROME WITH HEART VALVE AFFECTATION

**KEY TO SUCCESS:**  
Multidisciplinary team  
(Cardio-oncologist, oncologist, general surgery, endocrinologist)

**Prognosis:**  
Determined by **heart involvement + metastases.**

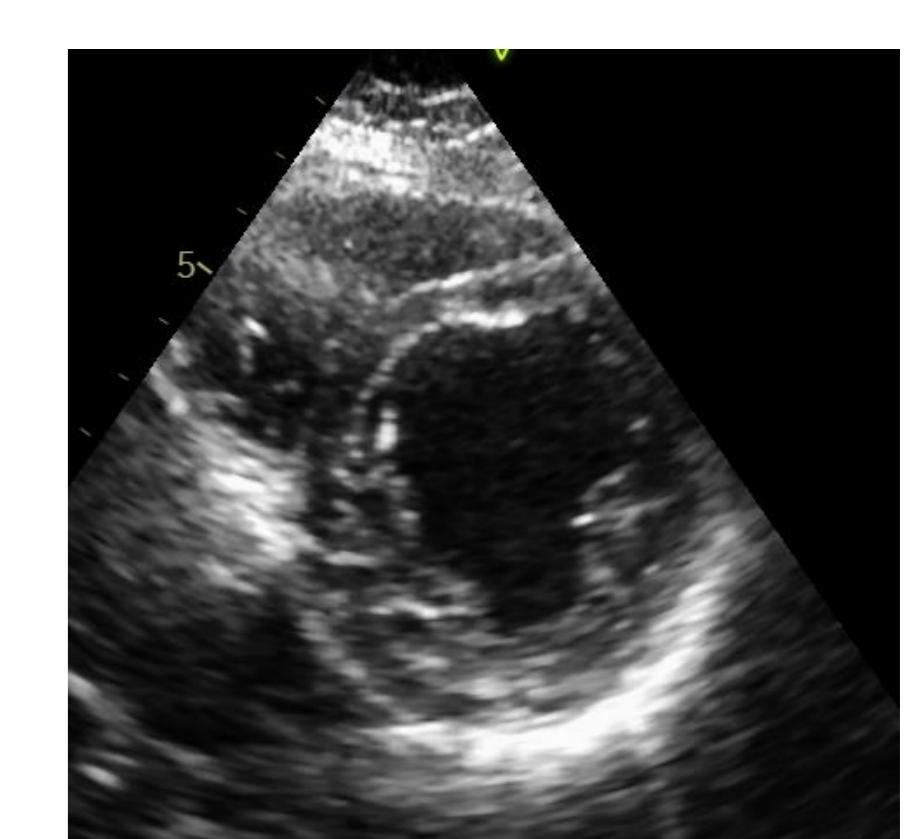
### Treatment strategy:

- **Symptoms:** Medical treatment with Somastatine analogues (Lanreotide 150mg/1 month).
- **Curative treatment (+ carcinoid crisis prophylaxis):**
  1. Heart valves: Replacement surgery.
  2. Tumor: surgical exeresis + metastases.

## Follow-up: 6 months

### Cardiopathy

- Asymptomatic CV.
- **RV Reversal remodeling.**
- Normofunctional prothesis.



- **Neuroendocrine tumour**
  - Follow-up: oncology + general surgery + endocrinology.
  - Control CT: tumor stability. Asymptomatic.
  - Tumor-board decision: Pending surgery of right liver metastases (curative targeting).



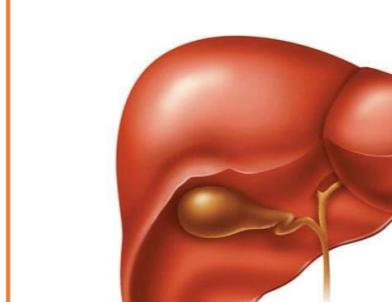
### Biological tricuspid and pulmonary valvular surgical replacement

3 months



### Laparoscopic resection surgery: TNE + left liver metastases.

3 months



### Right liver metastases radioembolization (Y90)

## Discussion

LGTNE are rare slow-growing tumors, originate in cells of the diffuse neuroendocrine system, more frequently in gastrointestinal and respiratory systems, **75% with metastases at diagnosis.** CS, secondary to hormonal overproduction, appears in 20-30% of patients: flushing, abdominal pain/diarrhea, bronchoconstriction. More than 50% with CS have cardiac involvement (associated with reduced survival): **tricuspid almost all**, 50% pulmonar and 90% right chambers dilatation. **Time for surgery, prosthesis choice**, anticoagulation, somatostatine analogues treatment and serotonergic crisis prevention during tumor surgery are aspects that require an individualization of each case and be **discussed by multidisciplinary team.**