



## ECOGRAFIA DEL TORACE

*A Domanico, V Arienti*

Centro di Ricerca e Formazione in Ecografia  
Internistica, Interventistica e Vascolare  
Divisione di Medicina Interna (V. Arienti)  
Ospedale Maggiore – Bologna

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## ECOGRAFIA DEL TORACE Tecniche e vie di approccio

- Ecografia transtoracica
- Ecografia transbronchiale
- Ecocardiografia transtoracica transesofagea
- Ecografia mammaria



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## ECOGRAFIA DEL TORACE

### Vantaggi US

- Affidabile
- Basso costo
- Innocua
- Ripetibile

### Limitazioni US

- Aria nei polmoni
- Strutture ossee

### Indicazioni US

- Patologie periferiche diaframma, parete tor., pleura, polmone
- Mediastino antero-sup.

### Ruolo US

- Complementare a
  - Rx
  - TC
  - RM

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## ECOGRAFIA DEL TORACE

### Ecografia transtoracica (ETT)

- ❑ Tecnica di esecuzione
- ❑ Quadri US patologici più frequenti
- ❑ Utilità della ETT nelle patologie pleuro-polmonari

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## ECOGRAFIA DEL TORACE

### Sonde

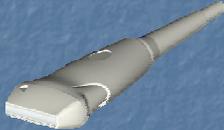
Settoriali, Convex,  
Microconvex



**3,5-5 MHz**

Strutture profonde  
(visione panoramica)

Lineari



**7-10 MHz**

Strutture superficiali  
(parete toracica, pleura, ...)

Eco-color Doppler di scarso utilizzo

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## ECOGRAFIA DEL TORACE

### Tecnica di esecuzione

#### Preparazione

- ❑ Nessuna
- ❑ Talvolta (O<sub>2</sub> terapia, sedativi tosse)

#### Posizione del paziente

- ❑ Supina (pl. basale e diaframma)
- ❑ Seduta (visione panoramica)
- ❑ Ortostatica (seni costo frenici)

#### Scansioni multiple

- ❑ Intercostali
- ❑ Longitudinali
- ❑ Trasversali
- ❑ Oblique
- ❑ Sovraclaveari
- ❑ Sovra e parasternali
- ❑ Paravertebrali
- ❑ Sottocostali

**Finestre acustiche: fegato e milza**

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## ECOGRAFIA DEL TORACE

### Tipo di approccio



intercostale posteriore



sottocostale



intercostale laterale

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## ECOGRAFIA DEL TORACE

### Strutture esplorabili

- Parete toracica
- Diaframma
- Pleura
- Parenchima polmonare\*
- Mediastino\*\*

\* Patologia periferica (il polmone aerato crea riflessione del fascio US)  
 \*\* Patologia a localizzazione antero superiore e angoli cardio frenici

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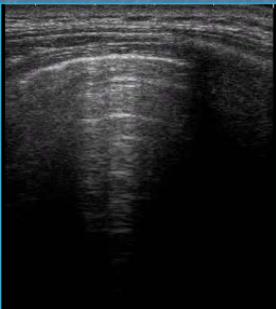
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## PARETE TORACICA E PLEURA

### Anatomia ecografica



#### Linea pleurica

Aspetto US

- Iperecogena
- Sincrona ai movimenti respiratori segno dello scivolamento:  
"gliding sign"

↓

dovuta ad attenuazione fascio US tra tessuti molli superficiali e l'aria contenuta nel polmone

Non coincide esattamente con la pleura (ecograficamente non visibile)

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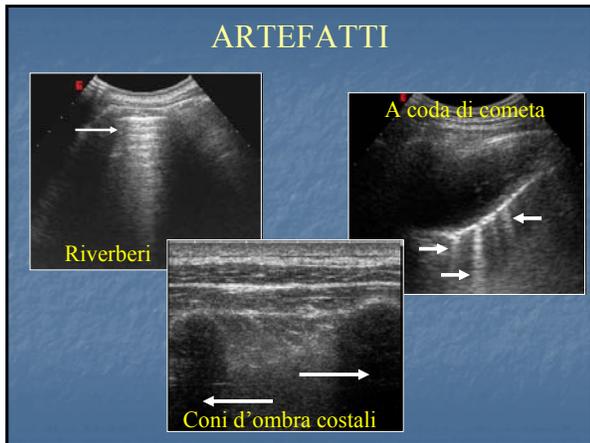
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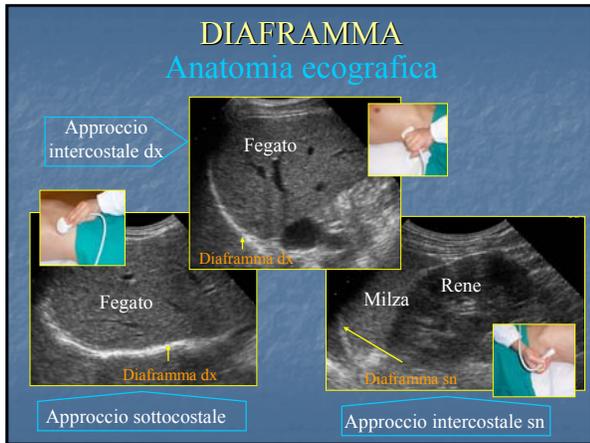
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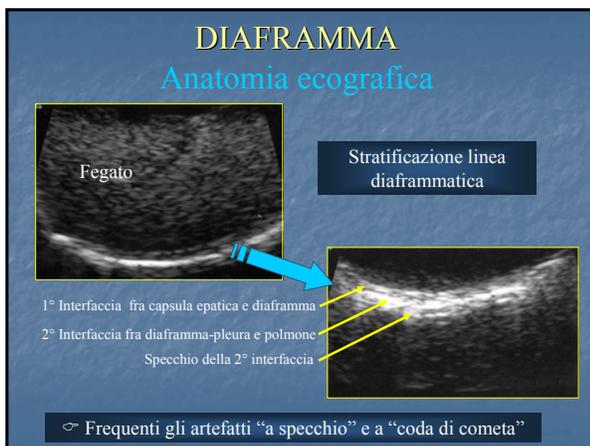
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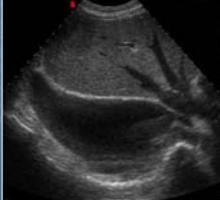
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## PATOLOGIA PLEURICA

### Versamenti pleurici

**ECOGRAFIA**  
Indagine di elezione



- Elevata accuratezza diagnostica
  - Superiorità rispetto a Rx torace
  - Versamenti anche < 10 ml
- Immediatezza
- Innocuità
- Basso costo

Formule di calcolo (?)

- Volume
- Entità atelettasia
- Grado di organizzazione

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## PATOLOGIA PLEURICA

### Versamenti pleurici

#### Massivo

**ESP**

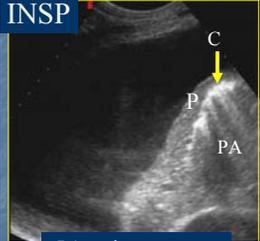


Versamento

P

P: polmone atelettasico

**INSP**



C  
P  
PA

PA: polmone aerato  
C: coda di cometa

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## PATOLOGIA PLEURICA

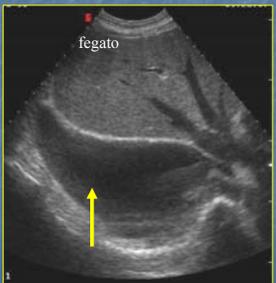
### Versamenti pleurici

#### Di media entità



polmone

cuore



fegato

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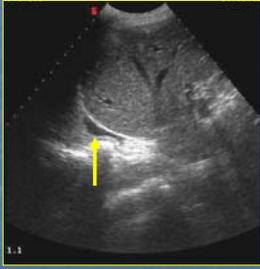
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**PATOLOGIA PLEURICA**  
Versamenti pleurici  
Minimo



Rx torace  
"negativo" per versamento



US  
versamento pleurico destro

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**PATOLOGIA PLEURICA**  
Versamenti pleurici  
Trasudati

**Aspetto US**

- Anecogeno
- Margini netti
- Libero: variabile con decubito
- Polmone atelettatico o consolidato



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**PATOLOGIA PLEURICA**  
Versamenti pleurici  
Essudati (emotoraci, empiemi, versamenti maligni)

**Aspetto US**

- Anecogeni e/o corpuscolati
- Liberi
- Saccati (non variabili col decubito)
- Concamerati o seppimentati
- Ispessimento pleurico
- Polmone atelettatico o consolidato



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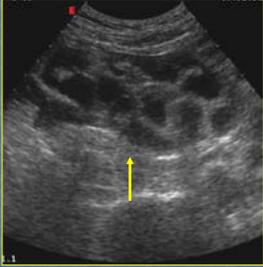
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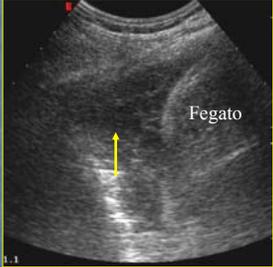
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## PATOLOGIA PLEURICA

### Versamenti pleurici



Saccato e sepimentato



Corpuscolato

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## PATOLOGIA PLEURICA

### Versamenti pleurici

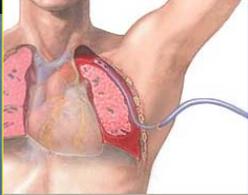
#### Toracentesi ecoguidata

**Scopo**

- Diagnostico (esame chimico-fisico, microbiologico, citologico)
- Terapeutico

**Vantaggi**

- Immediatezza
- Semplicità
- Riduzione del rischio di PNX




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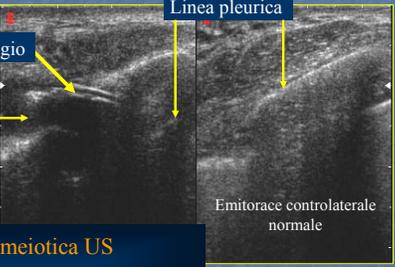
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## PNX



**Semeiotica US**

Scomparsa dei segni tipici del polmone aerato

- Segno dello scivolamento
- Artefatti a "coda di cometa"

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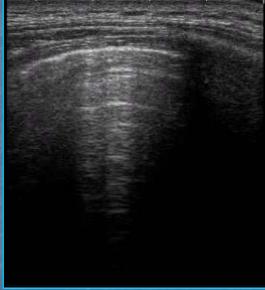
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## PNX



Quadro normale



PNX

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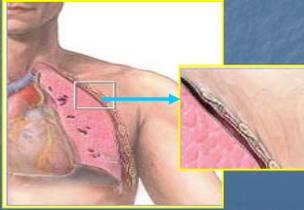
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## PNEUMOPATIE

### Esplorabili

- Lesioni periferiche (liquide, miste, solide)
- Lesioni profonde: se presente adeguata finestra acustica (versamento, atelettasia, consolidamento)

Condizione indispensabile ⇨ assenza di parenchima aerato



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## PNEUMOPATIE

### Tipi di lesioni e semeiotica US

Liquide → **anecogene, ben circoscritte**

- Cisti (congenite, parassitarie)

Miste → **Ipo-anecogene (echi in sospensione)**

- Ascessi, ematomi, K necrotici, cisti (evoluzione e/o complicazioni)

Solide → **prevalentemente ipoecogene, disomogeneo; margini irregolari; versamento pleurico associato**

- Broncopolmonite\*, infarto\*, neoplasie

### Atelettasia polmonare

- Struttura similparenchimale (≤ fegato)
- Strie ipoecogene (broncogramma fluido)
- Assenza di broncogramma aereo
- Vasi

\* Pattern variabile nel tempo (dd con K)

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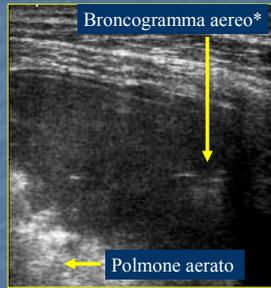
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## POLMONITE

### Aspetto US

- Area ipoecogena
- Contorni sfumati
- Variabile con la dinamica respiratoria
- Versamento pleurico
- Broncogramma aereo
- Strie iperecogene (segno tipico di polmonite)

L'aspetto US si modifica con l'evoluzione del quadro clinico



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## POLMONITE

Focolaio broncopolmonare dx confronto con CT



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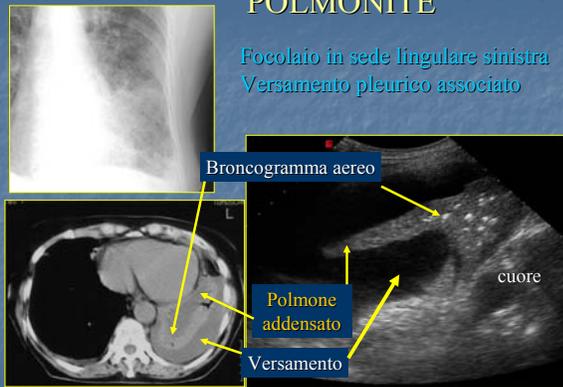
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## POLMONITE

Focolaio in sede linguare sinistra  
Versamento pleurico associato



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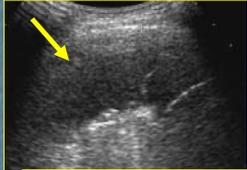
## INFARTO POLMONARE

### Aspetto US

- Area ipoecogena di forma triangolare a base pleurica
- Contorni sfumati
- Dimensioni US < area infartuale (zone periferiche nascoste da parench. aerato)
- Eventuale versamento associato

### Evoluzione

- ↑ definizione dei margini
- Riflessi iperecogeni contestuali (bronchioli occlusi)



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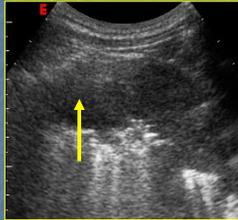
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## NEOPLASIE

### Carcinoma polmonare

#### Aspetti US

- Lesione solida, ipoecogena
- Lesione mista (colliquazione)
  - > DD ascesso
- Invariabilità con atti del respiro
  - > DD polmonite
- Contorni irregolari
  - > Infiltrazione pleura, parete toracica
- Versamento pleurico associato



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## NEOPLASIE

### Tumore di Pancoast polmone dx



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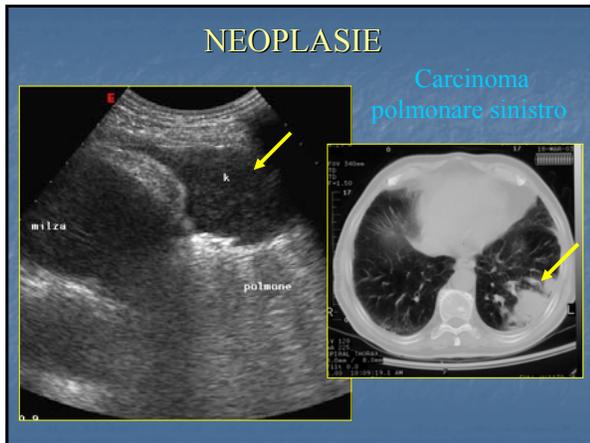
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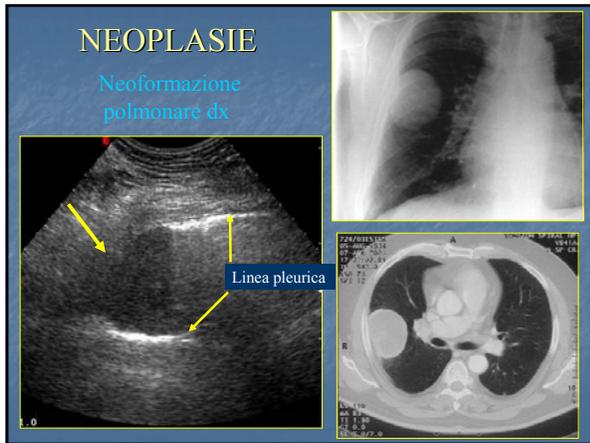
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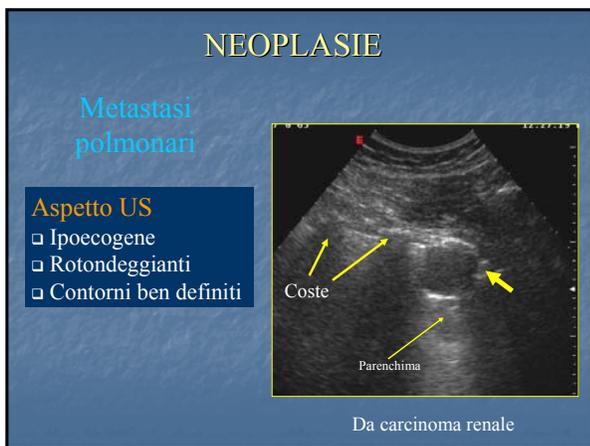
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## NEOPLASIE Metastasi polmonare sn da K renale

Confronto con altre indagini

CT PET  
Rx Scintigrafia

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## PATOLOGIA MEDIASTINICA

### LINFOADENOMEGALIE

- Granulomi
- Metastasi
- Linfomi

**Aspetto US**

- Ben delimitati o confluenti
- Ipoecogeni
- Disomogenei (necrosi-calcificazioni)

### MASSE ADIPOSE

- Lipomi
- Timolipomi
- Teratomi

**Aspetto US**

Intensamente ecogeni

**Utilità US**

- Guida a prelievo biotico
- Follow up linfoma dopo trattamento

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## ECOGRAFIA TRANSTORACICA

### Conclusioni I

- Utile nello studio della patologia pleurica e polmonare a localizzazione periferica

- Basso costo
- Innocua
- Ripetibile

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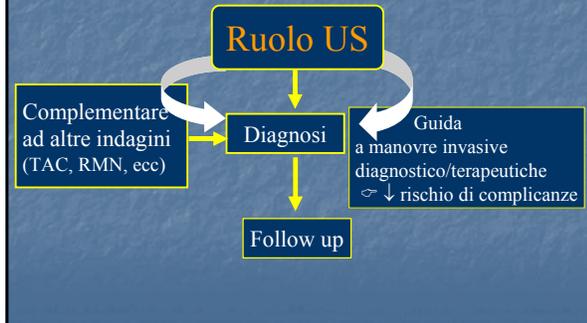
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## ECOGRAFIA TRANSTORACICA Conclusioni II



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