2014

- Marijuana legalization - Colorado, Washington; AK, OR, DC
- Police Violence - Race Relations: #BlackLivesMatter
- CelebGate/GameGate - Internet and women Rights
- Corporation Hacking - Target, Home Depot, Sony
- Smart Devices - Watches: Google and Apple
- Delivery Drones - Amazon and Google
- Uber Transportation - Cab companies decrease service
- ISIS Terrorism - Expansion in Middle east and Europe
- Ebola - 6,000 deaths; US cases; Emory Treatment Center
Thoracic Surgery
Outline

- CT Screening - CMS approval and NLST Smoking
- PET Scanning - DX Lung Cancer/Infectious Disease
- MIS - Wedge vs SBRT; Open, VATS or RATS
- Patient Safety - Non-intubated GTS procedures
- ESLD - Emphysema: LVR - FOB Coil vs Surgery
- Lung Transplantation - Lung Cancer development
- Quality Improvement - LMA vs ETT - Percut Trach
- Esophageal Cancer - Induction therapy ± Surgery
Lung Cancer Screening

110 million current or former smokers in US
Lung Cancer
CT Scan Screening

Squamous cell carcinoma, occult on CXR
Lung Cancer Screening
NLST

- 53,500 patients (Current or former smokers) – 33 sites
  - Emory 1250 patients; 620 pts CT scans ($1.2 million)
- RCT – CXR vs CT Scan (HR) – Annually for 3 years
- High Risk - > 30 PYs, Smoked within 15 yrs, Age: 55 – 74 yo
- Results –
  - 20% reduction in lung cancer mortality
  - 7% reduction in overall mortality
- ACS, ALA, ATS, ACCP, NCI – Support screening
- US Preventive Services Task Force Recommendation
- CMS approval 2014
Lung Cancer Screening
CMS Approval


Age 55-74 years
Asymptomatic (no signs or symptoms of lung disease)
Tobacco smoking history of at least 30 pack-years
Current smoker or one who has quit smoking within the last 15 years
Order for LDCT lung cancer screening that meets CMS criteria included in an initial visit
Documentation of tobacco cessation counseling

The radiologists who will be reimbursed for interpreting screening studies:
Certification with the ABR; Training in radiology/radiation safety
Involvement in interpretation of at least 300 chest CT scans over past 3 years
Documented participation in CME accordance with current ACR: Data submitted to CMS
NLST

Smoking Cessation
Data from NLST were used to prepare multivariable longitudinal regression models predicting annual smoking cessation in those who were current smokers (15489/29%). The associations of lung cancer screening on smoking cessation were analyzed.

Smoking cessation was strongly associated with the amount of abnormality observed in the previous year's screening (P < .0001). Compared with those with a normal screen, individuals were less likely to be smokers if their previous year's screen had a major abnormality that was not suspicious for lung cancer (OR = 0.811; P < .001), was suspicious for lung cancer but stable from previous screens (OR = 0.785; P < .001), or was suspicious for lung cancer and was new or changed from the previous screen (OR = 0.663; P < .001). Differences in smoking prevalence were present up to 5 years..

Smoking cessation is statistically significantly associated with screen-detected abnormality. Integration of effective smoking cessation programs within screening programs should lead to further reduction in smoking-related morbidity and mortality.
Lung Cancer
FDG PET Scan

T1N0M0 Adenocarcinoma

Databases were searched from 2000 - 2014. Studies reported on a total of 8511 nodules; 5105 (60%) were malignant.

Heterogeneity for sensitivity (87%) and specificity (82%) was observed across studies. The pooled sensitivity was 89% and specificity was 75%. There was a 16% lower average adjusted specificity in regions with endemic infectious lung disease (61%) compared with nonendemic regions (77%). In general, sensitivity did not change appreciably by endemic infection status, even after adjusting for relevant factors.

Use of FDG-PET combined with computed tomography was less specific in diagnosing malignancy in populations with endemic infectious lung disease compared with nonendemic regions. These data do not support the use of FDG-PET to diagnose lung cancer in endemic regions unless an institution achieves test performance accuracy similar to that found in nonendemic regions.
Lung Cancer Surgery
Open, VATS, or RATS

Stage IA
Lung Cancer Surgery
Open, VATS, or RATS


Using the 2008 to 2010 SIDB, we identified patients who underwent an Open, VATS, or RATS lobectomy from 8 states. Comparison of outcomes with propensity-matching. We identified a total of 33,095 patients (open: 20,238; VATS: 12,427; RATS: 430). In propensity-matched analysis, RATS resections were associated with significant reductions in mortality (0.2% vs 2.0%, p = 0.016), length of stay (5.9 vs 8.2 days, p < 0.0001), and overall complication rates (43.8% vs 54.1%, p = 0.003) when compared with Open. RATS resection was also associated with reductions in mortality (0.2% vs 1.1%, P = 0.12), length of stay (5.9 days vs 6.3 days, p = 0.45), and overall complication rates (43.8% vs 45.3%, p = 0.68) when compared with VATS; none of these were significant.

RATS resections appears to be an appropriate alternative to VATS and is associated with improved outcomes compared with open thoracotomy.
Lung Cancer Surgery
Open, VATS, or RATS

Wrong Decision
Lung Cancer
Small NSCLC Tumors
Stage IA
Early Stage Lung Cancer
Wedge vs SBRT


A prospectively collected database was reviewed for patients who underwent a wedge resection, a wedge plus brachytherapy, or SBRT for clinical stage IA NSCLC (2001-2012). There were 164 patients identified, 99 were matched by age, sex, and histology; 62% were women. Thirty-eight pts underwent a wedge resection only, 38 pts underwent a wedge with brachytherapy, and 23 pts had SBRT. Median follow-up was 35 months. Overall recurrence (local and distant) was significantly higher after SBRT (wedge 9%; SBRT 30%; p = 0.016). Recurrence-free 3-year survival was significantly better after wedge resection (88% vs 72%; p = 0.001), no difference between the two groups in disease-free 3-year survival (77% versus 59%; p = 0.066). Multivariate regression analysis identified male gender and SBRT as significant predictors for mortality and recurrence. Patients with clinical stage IA non-small cell lung cancer treated by SBRT appear to have higher overall disease recurrence than those treated by wedge resection.
Thoracic Surgery Procedures
Non-intubated Anesthesia

Video-assisted Thoracic Surgery

97% of Lobectomies - WellStar
45% of Lobectomies - STS GTSDB
21% of Lobectomies - Nationwide

**Advantages**

- **Avoiding** the potential risks of tracheal intubation
- Better results in postoperative fasting time, duration of postoperative antibiotic use, and duration of postoperative hospital stay
- **Earlier improvement** of quality-of-life domains, better mortality, morbidity, hospital stay, costs
- **Attenuated** the surgical stress responses and had a smaller impact on the postoperative lymphocyte responses

**Disadvantages**

- **Challenge and increased labor intensity to anesthesiologists**
- Disapproval from some thoracic surgeons
- The **risk of mental stress and post-traumatic stress disorder** for some patients
- Problems even mistakes induced by the **weak teamwork and poor communication**
- **Hypercapnia, airway support and preparation for conversion to intubated general anesthesia**
Lung Transplantation
Lung Cancer
Stage IIB

Most LTx recipients share at least two potent factors for lung cancer: history of smoking and immunosuppression. The risk is highest at the site of the native lung after SLTx in a smoker. The best prevention is achieved by favoring BLTx rather than SLTx.

Early diagnosis is capital for survival. Hence, periodic reevaluation should be planned for smokers on the waiting list; after transplantation, attention should be addressed to native lungs after SLTx and transplanted lungs originating from a donor with smoking history.

Surgical resection is the mainstay of curative treatment. Currently available data do not allow for any recommendation regarding tapering of immunosuppression or use of mTOR inhibitors. Nodal Involvement leads to poor overall survival.
Percutaneous Dilatation
Tracheostomy Technique

To assess the safety and effectiveness of ETT versus LMA in critically ill adult patients undergoing PDT in the ICU. Searched the CDBR (1984 – 2013).

Included in this review eight RCTs involving 467 participants. Four studies reported that no procedure-related deaths occurred with any intervention. Seven studies reported the numbers of participants with adverse events, showing no clear evidence of benefit of either LMA or ETT during PDT (P value 0.41). The number of participants with adverse events ranged from 0% to 33% in the LMA group and from 0% to 50% in the ETT group. The duration of the procedure was significantly shorter in the LMA group (P value ≤ 0.00001). No clear evidence of a difference between ETT and LMA groups was found for all other outcomes.
National Emphysema Treatment Trial

Emphysema – CT and Q scan
The trial investigated the feasibility, safety and efficacy of LVR coil treatment in a prospective multicentre cohort trial. Patients were treated in 11 centers. Safety was evaluated by recording all adverse events, efficacy by the SGRQ as primary endpoint, and secondary endpoints was change in PFTs, mMRC dyspnea score and 6MWD at 12 months after treatment.

Sixty patients (FEV1 30.2 ± 6.3% were bronchoscopically treated with coils (55 bilateral, 5 unilateral), with a median of 10 (range 5-15) coils per lobe. At 6 and 12 months, ΔSGRQ was -12.1 and -11.1 points, Δ6MWD was +29.7 and +51.4 m, ΔFEV1 was +0.11 and +0.11 L, and ΔRV was -0.65 and -0.71 L (all p<0.01). Significant responses for SGRQ, 6MWD and RV in patients in both heterogeneous and homogeneous pts.

LVR coil treatment results in significant clinical improvements at one year in ESLD pts.
13,500 Americans will be diagnosed with esophageal cancer in 2014.

90% of these patients will die because of advanced stage at the time of presentation.

Accurate preoperative staging is essential prior to initiation of treatment:
- Distant disease
- LN involvement
- Local invasion

EGD, RFA – Barrett’s Esophagus, PPIs, Nissen
Esophageal Cancer
Induction Therapy or Not
This study compared survival of esophagectomy alone versus induction therapy followed by esophagectomy clinical T2N0 esophageal cancer in the NCDB (1998-2011). There were 1599 esophagectomy pts, induction therapy was used in 44.1% (688). Pretreatment staging was accurate in only 26.7% of patients (210 of 786) who underwent initial surgery without induction: 41.6% were upstaged and 31.7% were downstaged. Adjuvant therapy was given to 50.2% of patients treated initially with surgery who were found after resection to have nodal disease. There was no significant difference in long term survival between strategies of surgery alone vs induction therapy followed by surgery (median 41.1 versus 41.9 months, p = 0.51), induction therapy was not independently associated with risk of death (hazard ratio [HR], 1.16, p = 0.32). Induction therapy for patients with T2N0 cancer is not associated with improved survival.
Thoracic Surgery
2014

ICD-9
13,000
Codes

ICD-10
68,000
Codes

GOODBYE
2014
AND
HELLO
2015