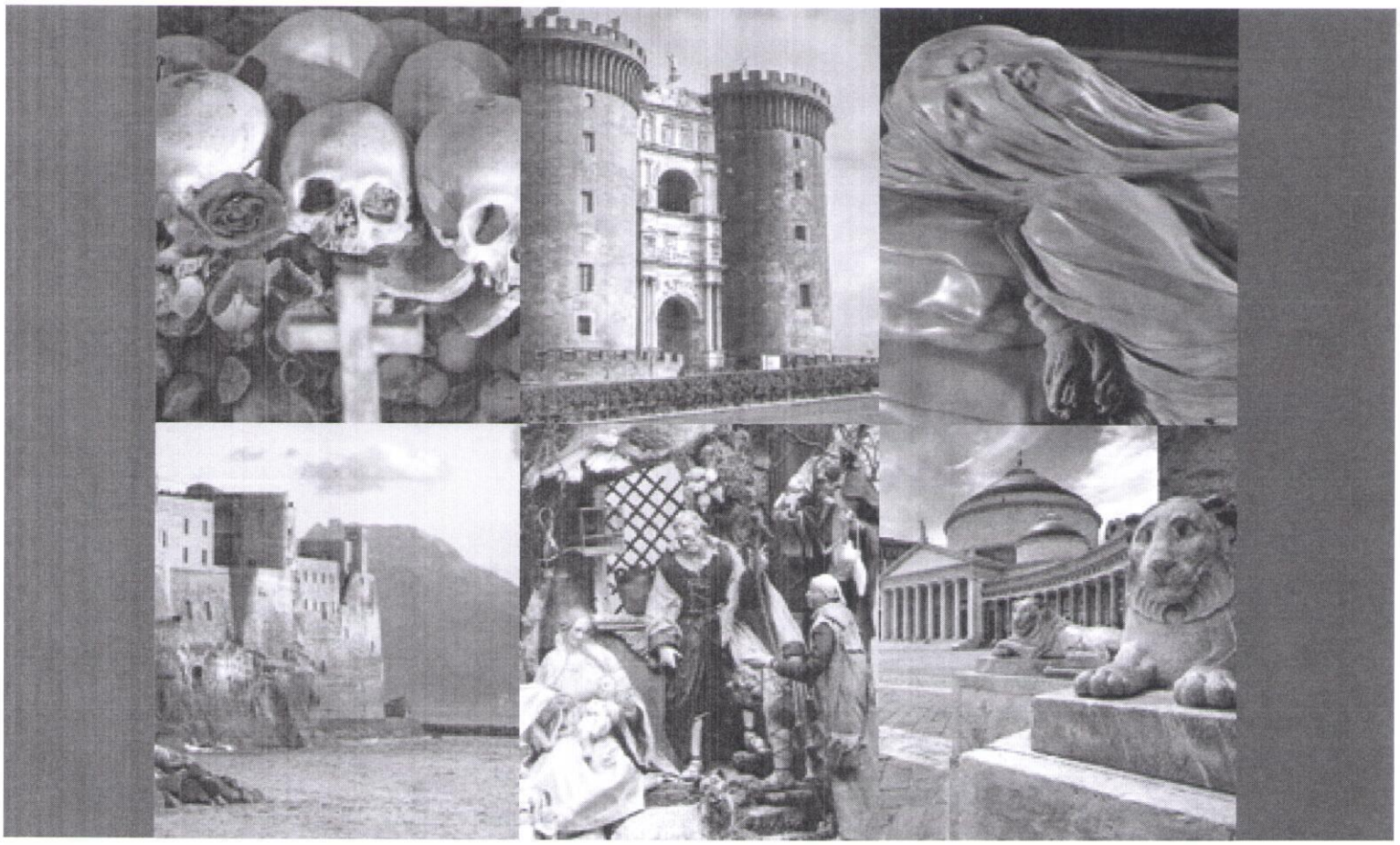
SIU
SOCIETÀ ITALIANA
DI UROLOGIA
FONDATA NEL 1908

LIBRO ABSTRACT



90° Congresso Nazionale

SOCIETÀ ITALIANA DI UROLOGIA

Mostra d'Oltremare
NAPOLI 7-10 ottobre 2017

dal 1973 EMILIA VIAGGI
evcm
CONGRESSI & MEETING

P1

CLINICAL UTILITY OF COMPUTED TOMOGRAPHY HOUNSFIELD CHARACTERIZATION FOR PERCUTANEOUS NEPHROLITHOTOMY

A. Gallioli, E. De Lorenzis, M. Fontana, L. Boeri, M. Delor, G. Sampogna, F. Palmisano, S. Zanetti, F. Longo, M. Ferruti, A. Trinchieri, E. Montanari (*Milano*)

Aim of the study

To assess the predictive value of a wide range of Hounsfield (HU) parameters at pre-operative Computed Tomography (CT) for stone composition and outcomes in percutaneous nephrolithotomy (PCNL).

Materials and methods

77 consecutive cases of PCNL performed at our Institution between January 2011 and April 2016 were enrolled and divided into 4 groups: 40 (52%) calcium, 26 (34%) uric acid, 5 (6%) struvite and 6 (8%) cystine stones. Patients' demographic and peri-operative data were recorded. All images were reviewed by a single urologist. The following parameters were evaluated at abdomen/bone windows: stone volume, core (HUC) and periphery HU and their absolute difference. HU density (HUD) was defined as the ratio between mean HU and the stone's largest diameter. Descriptive statistics were used to analyze the cohort. Receiver Operating Characteristic (ROC) curves were generated to assess the predictive power of HU for stone composition/stone-free rate.

Results

No difference was found between abdomen and bone window HU measurements. Struvite stones had values between those of hyperdense (calcium) and low-density (cystine/uric acid) calculi for all parameters except HUD, which was the lowest. All HU variables for medium-high density stones were greater than low-density ones ($p<0.001$). HUC best differentiated the two groups (cut-off 825 HU; specificity 90.6%, sensitivity 88.9%). HUD distinguished calcium from struvite (mean±SD 51±16 and 28±12 respectively; $p=0.02$) with high sensitivity (82.5%) and specificity (80%) at a cut-off of 35 HU/mm. At multivariate analysis an HUD >= 38.5 HU/mm was found to be an independent predictor of stone free rate (OR=3.1, $p=0.03$). No relationship was found between HU values and complication rate.

Discussion

HU parameters may help predict stone composition at the pre-operative CT, creating a flow-chart based on HUC and HUD values with integrated laboratory and demographic data to recognize stone composition. The possibility to characterize uric acid stones with such accuracy may help to individuate candidates for oral chemolysis. HUD is an independent predictor of PCNL failure. Thus, it may be an important tool to categorize the risk of residual fragments, driving the imaging choice at follow-up.