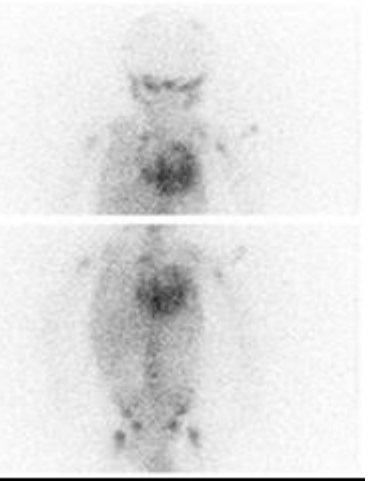
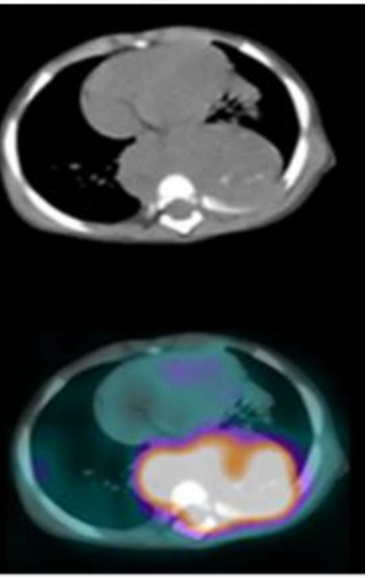
NEUROBLASTOMICS





Prognostic significance of

tumor heterogeneity in Neuroblastoma

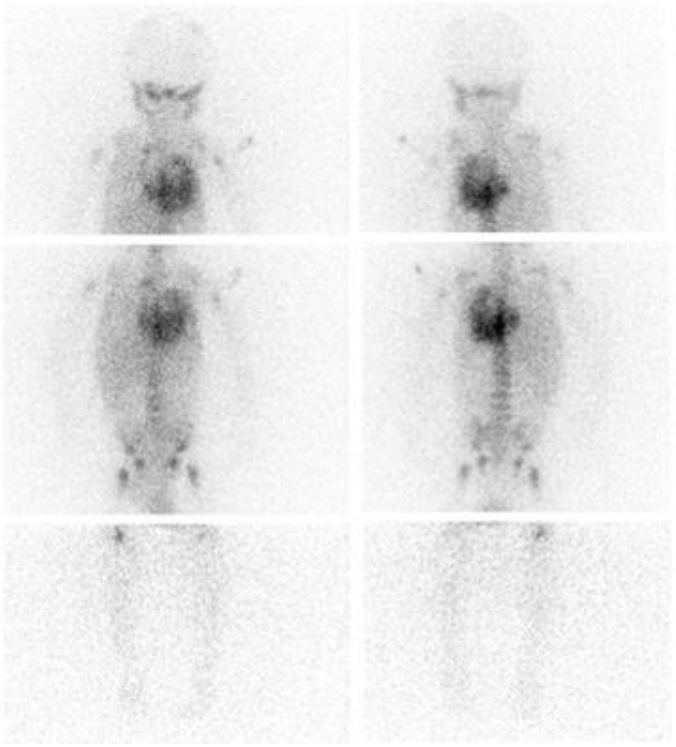
using pre-treatment MIBG SPECT/CT :

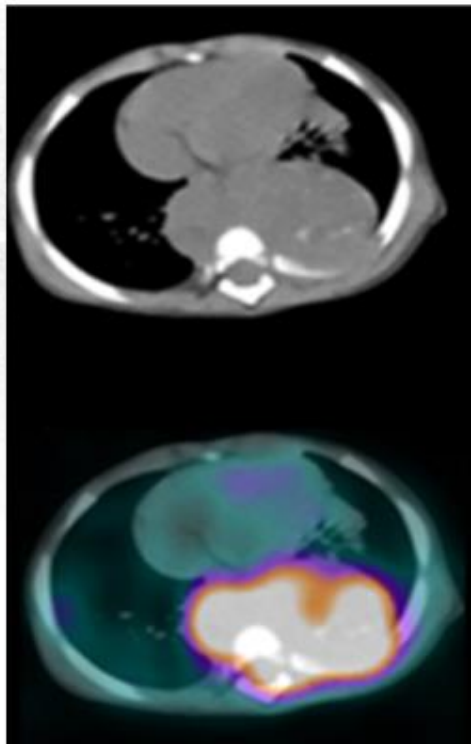
Is there a place for Radiomics ?

MIBG SPECT CT?

A Pivotal Player in Neuroblastoma's Management

- DIAGNOSTIC
- PRONOSTIC
- THERANOSTIC





NEUROBLASTOMICS

- Retrospective Monocentric Study - *Institut Curie*

- Collaboration with LITO

F. Orlhac, H. Fokem Fosso, C. Nioche, I. Buvat

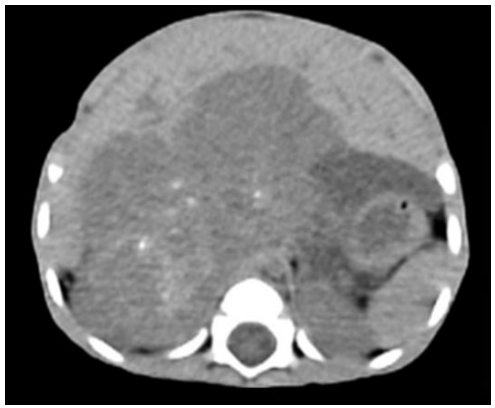
- Scientific Support of the EANM's Paediatric Committee

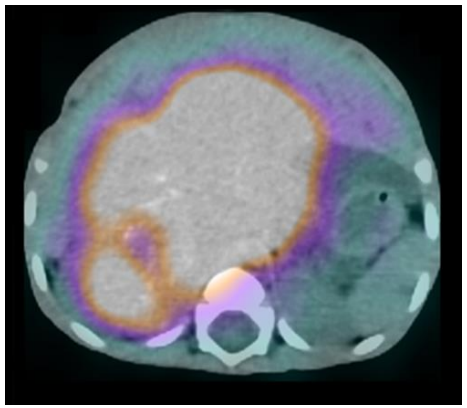
NEUROBLASTOMICS

"To assess the prognostic significance of primary tumor heterogeneity in neuroblastoma, based on pre-treatment MIBG SPECT/CT radiomic features"

Tumor avidity, Tmax, Tmean,
MTV, Shape features, Textural features…

→ Extraction of a Radiomic Signature





Is RS able to predict :

- *OS (2y / 5y)*
- *RR of Relapse*
- *RR of Refractory disease*

NEUROBLASTOMICS

Secondary Objectives

To explore the relationship between radiomics SPECT/CT patterns and :

1/ Other prognostic factors of Neuroblastoma

2/ Tumoral response on post induction MIBG

3/ Other histologies (*GN maturing, GNB intermixed, GNB nodular)*

NEUROBLASTOMICS

Inclusion Criteria

- Newly diagnosed patients (<18 yo) with neuroblastoma, ganglioneuroma, ganglioneuroblastoma
- Pre-treatment MIBG performed in Curie Institute

Exclusion Criteria

- > 18 yo at diagnosis
- Pre-treatment MIBG scan form another center
- Pre-treatment MIBG scan without SPECT/CT focused on primary tumor
- Parents Opposition to Data Re-use

NEUROBLASTOMICS

- Newly diagnosed patients from *09/2012 to 09/2019*

- Follow-up ≥ 2 years (*09/2012 to 09/2021*)

272 patients screened

851 MIBG in our PACS - among which 600 SPECT/CT

⬇

123 Patients Included

(90 NRB + 10 GN + 14 GNRB + 2 NT undefined)

NEUROBLASTOMICS

COLLECTED DATA

CLINICAL DATA:

inclusion order number / sex / weight, height and age at diagnosis, /date of dg / comorbidities / hypertension & and paraneoplastic sdr, INRGS

BIOLOGICAL, HISTOLOGICAL AND GENETIC PROGNOSTIC DATA :

LDH /catecholamines,

INPC /

mycn status / segm. vs num / Alk / 11q aberration

MIBG DATA :

Date / tracer and activity injected / quantitative data & radiomic features

TTT DATA :

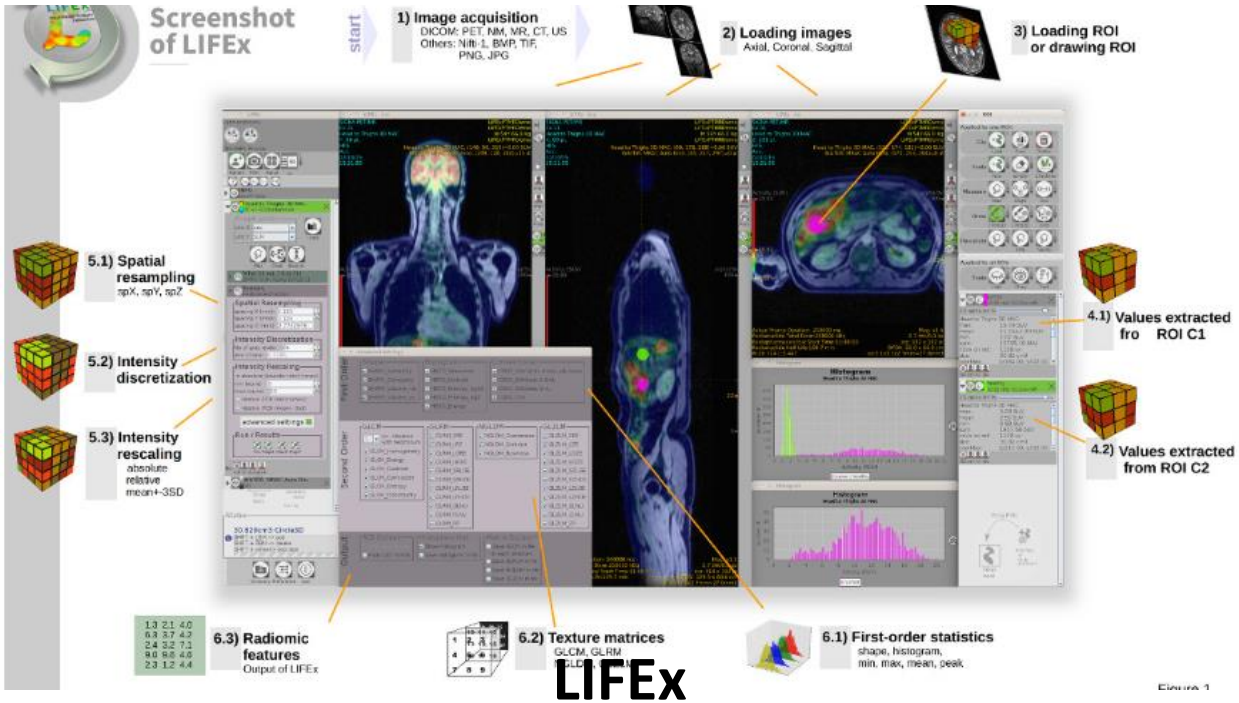
Initial treatment (chemo vs. no treatment vs. surgery) / Response to initial TTT (INRC) / Therapeutic decision

FOLLOW UP DATA:

Status at 2 years / Status at 5 years : relapsed, refractory / RC VS PR VS PD VS SD / death / lost to sight

Date of last news

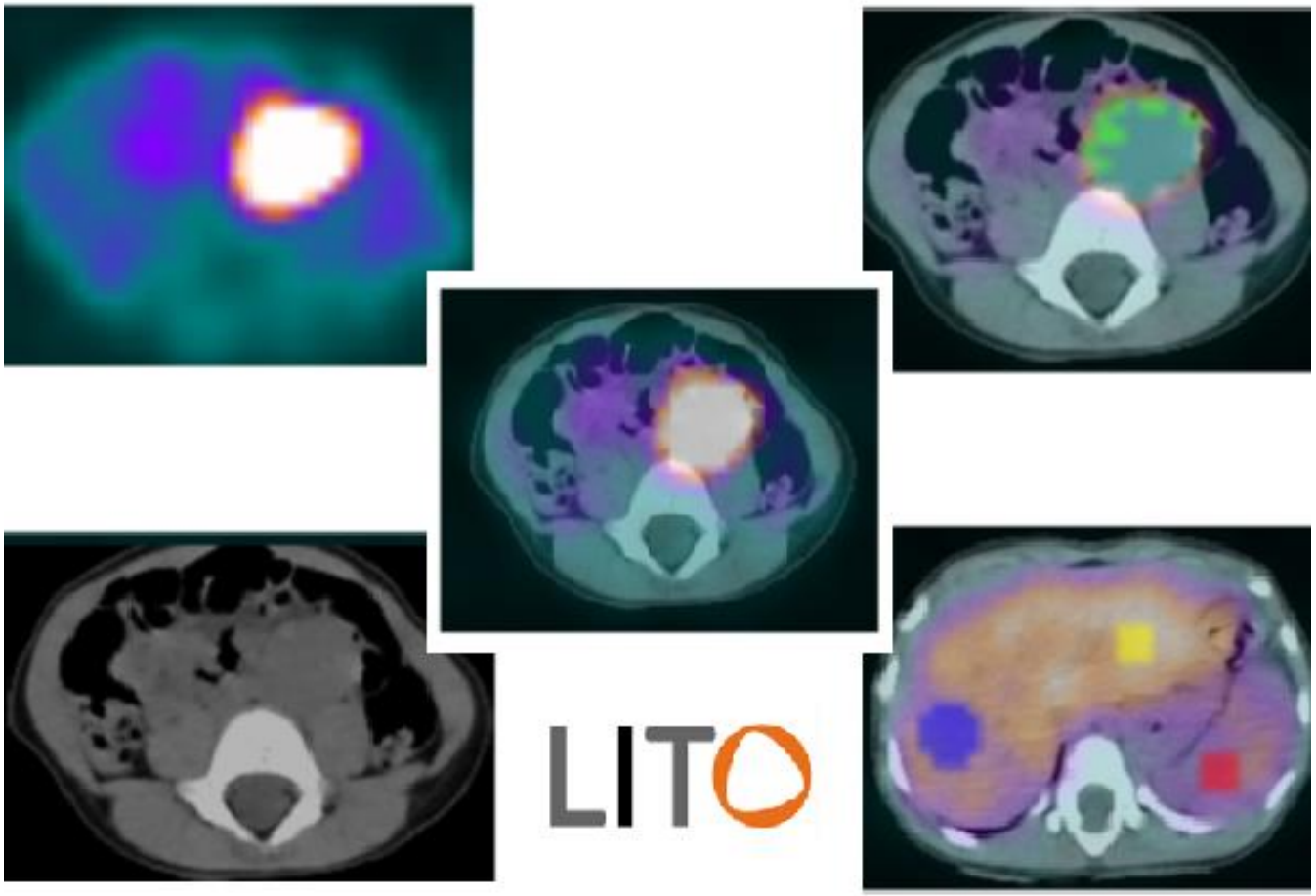
NEUROBLASTOMICS



LIFEx

"freeware dedicated to radiomic feature calculation in multimodality imaging."

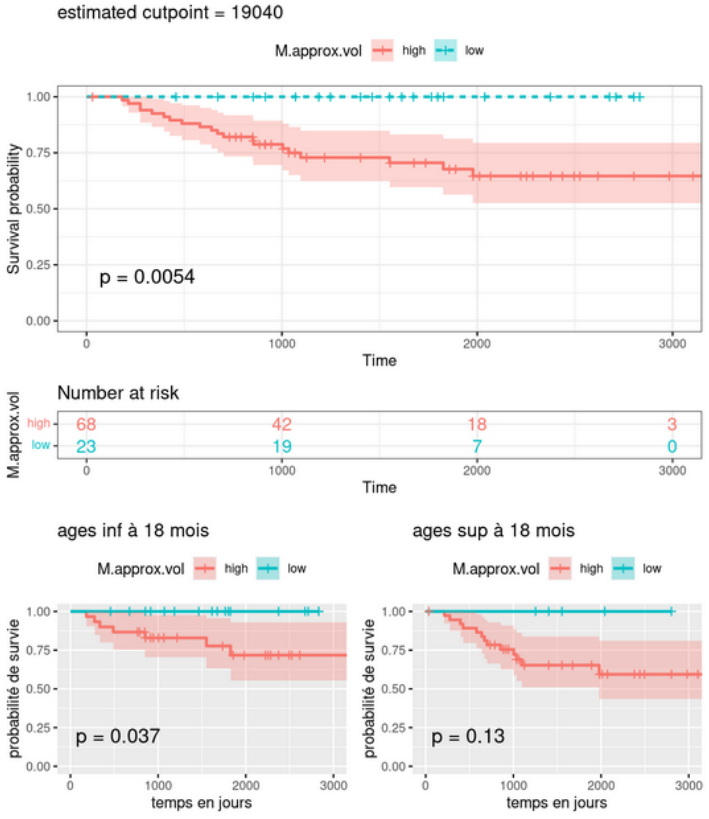
NEUROBLASTOMICS



NEUROBLASTOMICS

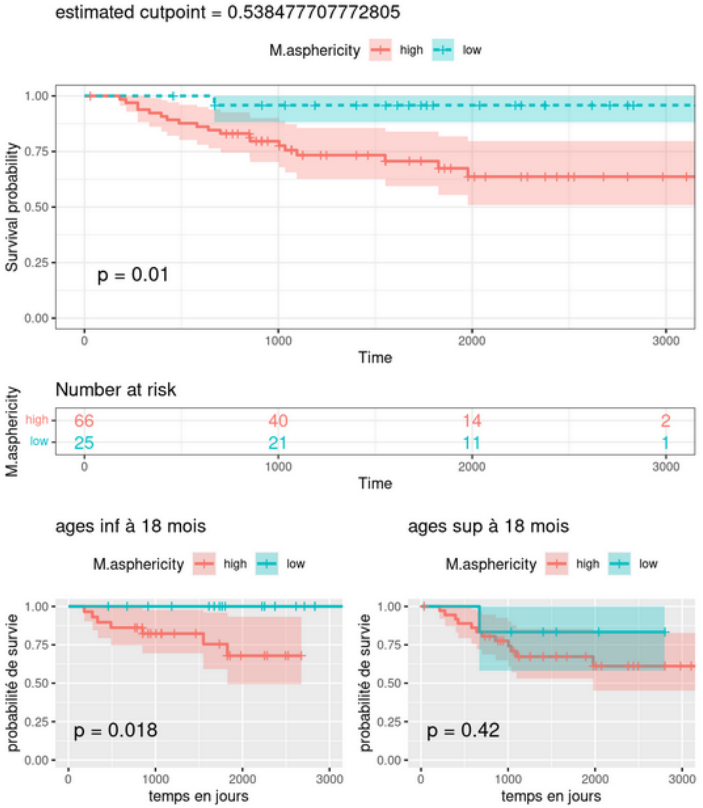
MORPHOLOGICAL APPROXIMATE VOLUME

cette variable est très fortement corrélée à la précédente (cf. corrPlot) avec un coéfficient de correlation de 0.9. C'est dor observe exactement le même résultat que précédemment et donc les mêmes observations énummérées plus haut



MORPHOLOGICAL ASPHERICITY

$Asphericity = Sphericity - 1$. Cette formule et graph montrent une forte correlation entre cette variable et la précédente. C'est donc sans surprise qu'on observe exactement les mêmes courbes et effectifs, les mêmes boxplots et les mêmes p-values



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