بسم الله الرحمن الرحيم

قالوا

سبحانك لا علم لنا إلا ما علمتنا إنك أنت العليم الحكيم

صدق الله العظيم

سورة البقرة الآية: ٣٢

Acknowledgement

First of all, great thanks to **Allah** *who enabled us to complete this work, hoping to provide a useful guide in the track of management of cancer patients.*

No words can express my deepest appreciation and profound respect to **Prof. Dr. Hala Mahmoud Abou Senna,** *Professor of Radio diagnosis, Ain Shams University, for her continuous guidance, support and constructive criticism throughout the work. She has generously devoted much of her time and effort. It was a great honor working under her supervision.*

Also, my gratitude goes to **Prof. Dr. Annie Mahmoud Nasr Mehana,** *Professor of Radio diagnosis, Ain Shams University, for her guidance and support.*

Wafaa Raafat Ali Abdel Hamid

To My Family,
You have been there for me every step of the way.
The Spirit of my One of a Kind Father,
The Love and Encouragement of my Iconic Mother,
My Devoted Husband and Soul mate,
My adorable daughter; Princess Ganna,
To me you are the World.

Contents

List of Abbreviations

Abb.	Meaning
AC	Adenocarcinoma.
ADC	Apparent Diffusion Coeffecient.
AJCC	American Joint Committee of Cancer.
ASII	Adrenal Signal Intensity Index.
ASR	Active Search Results.
ASR	Adrenal-to-spleen chemical shift ratio.
AUC	Area under the Curve.
BRCA 1,2	Breast Cancer types 1, 2 Susceptibility Protein.
BV	Blood Volume.
CNR	Contrast to Noise Ratio.
CT	Computed Tomography.
CTH	Chemotherapy.
DCE-MRI	Dynamic Contrast Enhanced- Magnetic Resonance Imaging.
DCIS	Ductal Carcinoma In Situ.
DTC's	Disseminated Tumor Cells.
DWI	Diffusion Weighted Imaging.
DWIBS	Diffusion Weighted Imaging with Background Body Signal Suppression.
ECM	Extracellular Matrix.
EGFR	Epidermal Growth Factor Receptor.
EPI	Echo Planar Imaging.
FDG	Fluoro Deoxy Glucose.
FNAC	Fine Needle Aspiration and Cytology.
HER2	Human Epidermal Growth Factor receptor 2.
K_{ep}	Reflux Constant.
K^{trans}	Vascular Transfer Constant.
LCIS	Lobular Carcinoma In Situ.
MBq	MegaBecquerels.
mCi	Millicurie
MDA	M.D. Anderson Cancer Center.
MDP	Methylene Diphosphonate.
MIP	Maximum Intensity Projection.
MPG	Motion Probing Gradient.

Abb.	Meaning
MPR	Multi Planar Reconstruction.
NOPR	National Oncologic PET Registry
NPI	Nottingham Prognostic Index.
NPV	Negative Predictive Value.
NSCLC	Non Small Cell Lung Cancer.
P53	Tumor Protein 53.
PET	Positron Emission Tomography.
PPV	Positive Predictive Value.
PTEN	Phosphatase and Tensin Homolog.
RF	Radiofrequency.
ROC	Receiver Operating Characteristics.
ROI	Region of Interest.
RTH	Radiotherapy.
Scc	Short for Sarcoma (Proto-Oncogene tyrosine protein kinase enzyme)
SCC	Squamous Cell Carcinoma.
SCLC	Small Cell Lung Cancer.
SIADH	Syndrome of Inappropriate Antidiuretic Hormone secretion.
SM	Sunitinib Malate.
SNR	Signal to Noise Ratio.
SPECT	Single Photon Emission Computed Tomography.
STIR	Short Tau Inversion Recovery.
STK11	Serine/Threonine Kinase 11.
SUV	Standard Uptake Value.
SUVmax	Maximum Standard Uptake Value.
TE	Echo Time.
TIM	Total Imaging Matrix.
TR	Repetition Time.
USPIO's	Ultra Small Particles of Iron Oxide.
VDI	Vessel Density Index.
VSI	Vessel Size Imaging.
WB-MRI	Whole Body- Magnetic Resonance Imaging.
WHO	World Health Organization.
ZA	Zoledronic Acid.

List of Figures