

قال تعالى :

﴿ اللَّهُ نُورُ السَّمَاوَاتِ وَالْأَرْضِ مَثَلُ نُورِهِ كَمِشْكَاةٍ
فِيهَا مِصْبَاحٌ الْمِصْبَاحُ فِي زُجَاجَةٍ الزُّجَاجَةُ كَأَنَّهَا
كَوْكَبٌ دُرِّيٌّ يُوقَدُ مِنْ شَجَرَةٍ مُبَارَكَةٍ زَيْتُونَةٍ لَا شَرْقِيَّةٍ
وَلَا غَرْبِيَّةٍ يَكَادُ زَيْتُهَا يُضِيءُ وَلَوْ لَمْ تَمْسَسْهُ نَارٌ نُورٌ
عَلَى نُورٍ يَهْدِي اللَّهُ لِنُورِهِ مَنْ يَشَاءُ وَيَضْرِبُ اللَّهُ
الْأَمْثَالَ لِلنَّاسِ وَاللَّهُ بِكُلِّ شَيْءٍ عَلِيمٌ ﴾
سورة النور الآية ﴿35﴾

Dedication

Every challenging work needs self-efforts as well
as guidance of elders especially those who were
.very close to our heart

To those of the fingers to give us a life of
.happiness

My humble effort I dedicate to my sweet and
.lovely mother

To reap the thorns out of my way for me to pave
the way science

To heart the great my father

Whose affection, love, encouragement, and
prays of day and night make me able to get
,such success and honor

Along with all hard working and respected
teachers

To my brothers, sisters, friends, and to all my
.family

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colleagues whose help me to collect***

the data and help me to complete .this study

Abstract

This study aimed to measure the shift of esophagus motion in external beam irradiation which lead to increase accuracy of determination of both PTV and ITV resulting in increase and enhancing therapeutic ratio and minimizing toxicity of both neighboring structure and rest volume of esophagus . This study was collected when treated patient is simulated using CT simulator of esophagus and chest organ treatment of cancer where the respiratory gated, three dimensional CT imaging of the full expiratory motion and .minimum and maximum displacement was measured based in CT data

The data analyzed with Mat lab program under windows with t-test to assess the Motion of Esophagus in Radiation Therapy, The final result show that there was a difference in average between the oesophagus position regarding to (X-reading) of the inspiration phase which is equal to 10.16 ± 3.31 and 10.6 ± 3.02 . This difference was not significant at $p= .05$ using t-test with $t= -9.74$ and $p=0.001$. As well as here is a difference in average between the oesophagus position regarding to (Y-reading) of the inspiration phase which is equal to 8.6 ± 2.02 and 12.7 ± 1.12 . This difference was significant using t-test with $t= .162$ and $p=0.87$

الملخص:

هدفت هذه الدراسة إلى قياس الإزاحة في حركة المرئ في العلاج بالأشعة الخارجية التي تؤدي إلى زيادة دقة تحديد كل من تخطيط حجم الهدف (PTV) وحجم الهدف الداخلي (ITV), مما أدى إلى زيادة وتحسين معدل العلاج وتقليل سمية كل من الأنسجة المجاورة. تم جمع البيانات في هذه الدراسة عند محاكاة العلاج للمرضى باستخدام جهاز الأشعة المقطعية (CT) لكل من المرئ والصدر في علاج السرطان أثناء حركة التنفس. وقد تم تصوير صور ثلاثية الأبعاد لحركة الزفير وتحديد الحد الأدنى والحد الأقصى للإزاحة من بيانات الصورة المقطعية, وتم تحليل البيانات باستخدام برنامج الماتلاب لتقييم حركة المرئ في العلاج الإشعاعي, وأظهرت النتائج النهائية إختلاف في المتوسط بين موضع المرئ خلال المحور السيني لحالة الشهيق والتي تساوي $3,02 \pm 10,06$ و $3,31 \pm 10,16$, وكان هذا الفرق غيركافي عند $p = 0.05$ باستخدام (74 T-test) و $(t = -9)$ و $(p = 0.001)$, وكذلك الإختلاف في المتوسط بين موضع المرئ خلال المحور الصادي لحالة الشهيق والتي تساوي $2,02 \pm 8,6$ و $1,12 \pm 12,7$, وكان هذا الفرق كافي عند $p = 0.05$ باستخدام $(t = 0.162)$ (T-test) و $(p = 0.87)$.

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List of abbreviation

Computed Radiography	CR
Planning target volume	PTV
internal target volume	ITV
Radiotherapy	RT
three-dimensional conformal	3D-CRT

radiotherapy	
Intensity modulated	IMRT
radiotherapy	
four-dimensional computed tomography	4DCT
gross tumor volume	GTV
internal gross tumor volume	IGTV
internal gross tumor volume maximum intensity projection	IGTVMIP
maximum intensity projection	MIP
External beam radiation therapy	EBRT
high-dose rate	HDR
low-dose rate	LDR
International Commission on Radiation Units	ICRU
Clinical Target Volume	CTV
National Cancer Institute	NCI
Organs at Risk	OAR
Tumors Control Probability	TCP
radiation and isotopes center of Khartoum	RICK