Abstract: The aim is to study the diagnostic value of CT examination of mediastinal tumoral masses, both in formation finding and in describing the tumoral relations with the surrounding elements. From the analyzed plot of patients, 172 have been sent for CT examination with the suspicion of mediastinal masses, from which 98 cases have been confirmed, 36 new discovered cases. The types of CT evaluated formations have been the following: timoma, teratoma, lymphoma, lipoma, neurogenic tumours, sarcoidosys, intrathoracic goiter, and adenopathies secondary to extramediastinal processes, post-therapeutic, adenopathic recidivations in lymphoma, mediastino-pulmonary tumours and oesophageal tumour.

Conclusions: Because there are real difficulties in evaluating the mediastinum in case of conventional cardio-pulmonary radiography it is recommended that any simptomaticology which suggests mediastinal affection should be evaluated through CT. Although the positive diagnosis is established after the anatomo-pathologic exam, CT has the capacity to make a differential diagnosis in space replacing formations at mediastinal level, orienting in either choosing the surgical method or chemotherapy, or even in the acquisition method of the piece subjected to the histo-pathological exam. Through its specificity and reproducibility, CT is the election method in monitoring mediastinal masses, as well in mediastinum monitoring during and after chemotherapy.

Key Words: Computer tomography, mediastinum, mediastinal tumours, study case, e-training

1. Introduction

Computer-tomography is the first hand imaging technique used to evaluate anomalies (neoplazic, congenital, inflammatory) observed at thoracic radiography (presumed to be at mediastinal level). [2]
For person involved in CT-image analyse [1, 6] is essential to knowing the anatomic support and to have a very good radiological background.
Role of CT in diagnosis is essential in 90% of cases and in 1/2 – 2/3 of cases other invasive exams are needed before surgery.
As is mention in studies made by Cameron D. W., Mathisen D.J. the majority tumours located in mediastinum are positioned in anterior mediastinum and are tumours of thymus. [1]
Masses placed in the superior mediastinum represent about 50 % of the total number of mediastinal masses. They are: tumours of the thymus (thymoma, timic carcinoma, thymic carcinoma, thymolipoma), germinal tumours, endocrine tumours (thyroidal and parathyroidal), lymphoma, others: thymic cysts, lymphangioma, mesenchymal tumours, pseudotumours, vascular lesions – aorta, trauma [11]
Masses placed in the anterior mediastinum are: thymic hyperplasia, thymoma, thymic carcinoma; thymic carcinoma, thymolipoma, mediastinal germinal tumours and mediastinal lymphangioma. [3, 4, 5, 7]
The great majority masses placed in the middle mediastinum are adenopathies. Mediastinal lymphoma represents the most frequent mediastinal tumour (20% in adults and >50% in children) [8]
Others tumours can be sarcoidosis, tracheal tumours, bronchogenic cysts, diaphragmatic herniae, aortopulmonary paraganglioma, mezothelial cysts, pulmonary or aortic aneurysm.
Tumours with nervous origin are masses placed in the posterior mediastinum [9]: tumours with origin in the sympathetic ganglions, meningocele, cysts (gastroenteric, oesophageal, of the thoracic canal), other oesophageal affections (tumours, diverticulae, mega oesophagus) [10]

2. Objective

The aim is to study the diagnostic value of CT examination of mediastinal tumoral masses, both in formation finding and in describing the tumoral relations with the surrounding elements.
3. Materials and methods
Material and methods: A plot of 1837 patients, examined through thoracic CT for different thoraco-pulmonary pathology, has been analyzed over a period of one year (2010), at Medlife Policlinica Brasov

4. Results and discussions
1) From the total number of cases investigated by thoracic CT, a small number of cases presented mediastinal pathology (5.06%). (Chart 1)

2) The groups of age that presented the higher percentage of mediastinal masses were between 41-80 years, with a pick between 51-60 years.
We can observe a higher frequency of the apparition of mediastinal masses at masculine gender, at all the groups of age. (Chart 2)

3) The majority of the mediastinal pathology was localized in the middle mediastinum (73%) (Chart 3)

4) We observed a preponderance of the localization in the superior mediastinum of the intrathoracic goitre, thymoma and adenopathies. In the anterior mediastinum are localized with preponderance lymphoma, thymoma and adenopathies. In the middle mediastinum we observed lymphoma, adenopathies and mediastino-pulmonary tumours. In the posterior mediastinum are localized neurogenic tumours, adenopathies and oesophageal tumours. We observed that lymphoma, adenopathies and the mediastino-pulmonary tumours are located with predominance in the middle mediastinum. The primary of secondary adenopathies can be localized any compartments of the mediastinum (Chart 4)

5) The mediastinal adenopathies are presented at any group of age, the mediastinal neurogenic tumours are presented at small group of age, and the other
mediastinal pathology is predominant at adult age, between 41-60 years (Chart 5)

![Chart 5. Distribution of cases considered pathological according to age group](image)

**Clinical cases:**

Case 1 - Thymocarcinoma - 35 y.o. - Mediastinal tumoral mass, with situation in the anterior mediastinum and development towards the left, with pericardial and myocardial invasion; formation is spontaneously hypodense with liquidian densities, iodophilous in the solid parts.

![Figure 1- case 1 - Thymocarcinoma - 35 y.o. - CT chest with contrast, axial sections, MPR reconstruction – sagital, coronal plan.](image)

Case 2 - Hodgkin lymphoma - 50 y.o. - Large solid tumoral mass, inhomogeneous, with vast area of central necrosis and spontaneous hypo dense areas of intratumoural haemorrhage, situated in the whole mediastinum, predominantly placed towards the right; the mass is well delimited and has mass effect over all the vascular structures and the heart, without invading them.

![Figure 2- case 2 - Hodgkin lymphoma - 50 y.o. - CT chest with contrast, axial sections, coronal section lung window, MPR reconstruction – coronal plan.](image)

Case 3. Teratoma - 34 y.o. - Post-contrast CT exam - space replacing mass, predominantly developed in the superior mediastinum with extension towards the anterior and inter-aorto-caval mediastinum and the aortopulmonary window; native and post-contrast heterogeneous with important calcifications, partially iodophilous in the solid parts.

![Figure 3- case 3 - Teratoma - 34 y.o. - CT chest with contrast, axial sections, MPR reconstruction – coronal plan.](image)

Case 4– Diaphragmatic hernia – CT exam with contrast substance

![Figure 4- case 4 - Diaphragmatic herina - CT chest axial sections, MPR reconstruction – coronal plan.](image)

Case 5 - post therapy - 55 y.o. - Large mediastinal tumoral mass, spontaneous hypo-dense, hetero-dense, ionophyle, with multiple calcar inclusions; formation situated in the superior mediastinum, anterior to the vascular plan, developing towards profound plans, as well as the posterior mediastinum; convers the large vessels at the base of the heart and elements of the right hilum, without invasion; multiple adenopathies with hilar, supraclavicular, and paratracheal calcar inclusions.
Figure 5- case 5 - Large mediastinal tumoral mass post therapy - 55 y.o. - CT chest with contrast, axial sections, VRT, MPR reconstruction – coronal plan

Case 6. Sarcoidosis - 26 y.o. - Native and post-contrast CT exam, multiple homogeneous solid masses, well delimited, moderately iodophyle, located paratracheal, hilar bilateral, as well as right parahilar

Figure 6- case 6 - Sarcoidosis - 26 y.o. - cardio-pulmonary X-ray, PA incidence, CT chest with contrast, axial sections, VRT, MPR reconstruction – coronal plan

Case 7. Neuroblastoma - 8 months old - large tumoral mass, spontaneous hypo-dense, heterogeneous, net contour, postero-inferior in the right hemithorax, with paravertebral development; the mass moves the heart, superior vena cava and descending aorta, cannot be detached from the T8-T9 conjugation hole, but does modify its configuration.

Figure 7- case 7 - Neuroblastoma - 8 months old. - CT chest with contrast, axial sections, MPR reconstruction – coronal, sagital plans.

Case 8 - Hodgkin Lymphoma - 61 y.o. - right mediastino-pulmonary tumoral mass, hetero-dense with necrosis and iodophyle areas in the solid parts, developed in the superior mediastinum and the ventral region of the right upper lobe, to sub-hilar level region; invasion of the superior vena cava, with stasis in the origin branches and in the azygos vein; tumours surrounding the right pulmonary artery and narrowing the right superior lobar bronchia; adenopathies lateral-aortic nodules in the aortopulmonary window and pre-vascular space.

Figure 8- case 8 - Hodgkin Lymphoma - 61 y.o. - CT chest with contrast, axial sections, MPR reconstruction – coronal, sagital plans.

5. Conclusions

From the analyzed plot of patients, 172 have been sent for CT examination with the suspicion of mediastinal masses, from which 98 cases have been confirmed (36 new discovered cases).

The types of CT evaluated formations have been the following: thymoma (3 case); teratoma (1 case); lymphoma (14 cases); lipoma (2 cases); neurogenic tumours (2 cases); sarcoidosis (4 cases); intrathoracic goitre (6 cases); adenopathies secondary to extramediatinal processes, post-therapeutic; adenopathies recidivating in lymphoma (41 cases); mediastino-pulmonary tumours (22 case); oesophageal tumour (3 case).

The majority of the mediastinal masses were located in the middle mediastinum.

The mediastinal pathology is more frequent at the groups of age between 41-60 years, indifferently of the type of the mass.

Through its specificity and reproducibility, CT is the election method in monitoring mediastinal masses, as well in mediastinum monitoring during and after chemotherapy.

Because there are real difficulties in evaluating the mediastinum in case of conventional cardio-pulmonary radiography it is recommended that any symptomatology which suggests mediastinal affection should be evaluated through CT.
Although the positive diagnosis is established after the anatomopathological exam, CT has the capacity to make a differential diagnosis in space replacing formations at mediastinal level, orienting in either choosing the surgical method or chemotherapy, or even in the acquisition method of the piece subjected to the histopathological exam.

Various existing data from our databases it leads us to believe that they can be use for developing an e-learning training database for radiology resident physician. In that way they will be capable to recognize the mediastinum pathology, which is one not common.

5. References