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RESEARCH ARTICLE

FACTORS PREDICTING PNEUMOTHORAX RECCURENCE.

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Abstract

Summary: Recurrence is the main risk of progression of spontaneous pneumothorax (PNX). The recurrence rate varies according to the authors between 20 and 60%. To determine the factors predicting recurrence of pneumothorax in our population, a retrospective analytical study was conducted over a period of five years between April 2010 and 2016, covering 46 cases of patients hospitalized for recurrent spontaneous pneumothorax. The smoking status of patients, the profession and the non-respect of hygiene rules remain in our context the main predictive factors for recurrence.

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Introduction:-

The PNX is defined as the presence of air in the pleural space. It's a frequent pathology of which the recurrence is the main evolutive risk, life threatening of the patient. The risk is increased by a variety of factors, which the identification helps to indicate some preventive measures.

Materials and methods:-

It's a retrospective analytical study over a five-year period, between April 2010 and 2016, conducted on 46 files of patients hospitalized for spontaneous pneumothorax recurrence. The PNX is considered primary or secondary depending on the existence or not of an underlying respiratory pathology. Excluded from the study, traumatic PNX, iatrogenic and the patients who kept a detachment on the first episode. The objective of our work is to specify the recurrence predictive factors in our population.

Results:-

The recurrent PNX present 19% (46 cases) of the whole hospitalized PNX during the study period. The average age was of 42 years old with a male dominance (44 men for 2 women). The active smoking was noted in 77% of patients (35 cases) with an average of 39 pack-years of cigarettes, associated to cannabis in 32% (15 cases). The average age of the beginning of toxic habits was 18 years old with extreme between 14 and 22 years old. In 60% of cases, patients had job requiring important physical efforts (butcher, mechanic) with impossibility of changing their job, which was linked to the recurrence in 87% (23 cases). In their medical history, 20% of patients (9 cases) were followed for chronic obstructive pneumonia, two patients (4%) were having uncontrolled asthma, five (11%) were treated for pulmonary tuberculosis, one patient had a cardiopathy and another one was followed for Behcet disease. The Thoracic CT-scan realized remotely from the PNX episode in 55% of patients (25 cases) had objectivated pulmonary emphysema in 53% (24 cases), sequelae cavities in 7% (15 cases) and blebs in 9 cases (19%). The PNX was considered primary in 73% and secondary in 27%. The average between the two episodes was

of 8 months. The respiratory manifestations were less noisy than the first episode dominated by dyspnea, dry cough and chest pain. The recurrence was homolateral in 91% of cases, contralateral in 9% of cases. The treatment of first episode was based on strict rest in all patients, the Needle aspiration alone in 53% (24 cases), the immediate drainage in 27% (12 cases) and the percutaneous chest drainage after Needle aspiration failure (average = 1,5) in 16% of patients (7 cases). The average deadline of the lung return to the chest wall, during the first episode was of 7 days in 75% (34 cases). The recurrence was treated by percutaneous chest drainage in 52% of cases, the talcage was proposed in 11% of drained patients. 30% of patients were treated surgically. The Needle aspiration alone with strict and close monitoring in 2% of cases; For young patients, with primary PNX, who had a partial detachment well tolerated secondary to an important physical effort, the lung return to the wall was fast after Needle aspiration.

Discussion:-

Recurrence is the main evolutive risk of spontaneous pneumothorax (PNX). According to the authors, it varies between 20 and 60% [1, 2]. In our series, the rate was of 19% on a five-year period. It's related to the toxic habits, the age of beginning smoking, the profession and the secondary character of pneumothorax. According to the literature, the homolateral recurrence rate is 40% during the second episode and 80% after the third one. The contralateral recurrence rate is 20%. In our series, the homolateral recurrence was objectivated in 91% of cases during the second episode. The recurrence risk seems to be increased by multiple factors which if known, allow considering from the first episode, a preventive treatment more adapted, especially medical talcage or surgical care, which can reduce the recurrence risk and the réhospitalisation cost. In this work, we found that active smoking, associated to the cannabis was the major risk factors of recurrence. This finding was also demonstrated in other works [2, 3, 4, 5]. The association of PNX and smoking was explained by inflammatory phenomena, induced by tobacco smoke, leading to an alveolar overdistention and air entrapment, increasing the risk of PNX occurrence as well as its recurrence [5]. Also, the smoking promotes the pulmonary emphysema, which exposes to the risk of PNX by their rupture. The results of work carried out on the PNX recurrence are very diverse. Sidakot and al [2] concluded after analyzing many potential risk factors that the recurrence wasn't related either to the patient body mass index (BMI), initial treatment of PNX or its size but was more frequent in men. The influence of age factor on the PNX recurrence wasn't demonstrated by the majority of authors [2, 6]. In our series, the average age is 45 years old. However, Lipzar and al [7] found that the recurrence is more important in patients over 60 years old. In our patients, the site, abundance of PNX, primary or secondary character, and the therapeutic means of first episode (53% were exsufflated and 47% drained) seem not to influence the recurrence. The input of Thoracic CT-scan in the evaluation of recurrence risk after a first episode of PNX wasn't clearly demonstrated [7, 8]. The results of studies realized by Ouannes et al [8] and Martinez Ramos and al [9], couldn't demonstrate that the presence, the size or the bubbles number on the CT-scan have an influence on the recurrence rate. As well as, in our series, we didn't establish this relationship. Then, the multivariate analysis realized by Ganesalingam et al [10], revealed that the presence of radiological anomaly increases the recurrence probability of PNX, and that this risk increases with each supplementary anomaly. The treatment can also influence the PNX recurrence, thus, in a prospective study Alfagene and al [11] have proven that Tetracycline pleurodesis is a good alternative for the prevention of the spontaneous PNX recurrence, thus, the rate of PNX recurrence was inferior compared to the drained cases, but still superior to those treated surgically. According to Harzet et al [12], the postoperative result shows that the videothoracoscopy is a sure and reliable method for the PNX first episode in order to obtain a quick and fast reexpansion of lung and the rate of long-term recurrence are acceptable compared to result after opened thoracotomy.

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