ejpmr, 2022,9(3), 205-208

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

THE STUDY OF THE DISTRIBUTION, DIAGNOSIS AND TREATMENTS OF PLEURAL EFFUSION (TRANSUDATE, EXUDATE) IN DAMASCUS HOSPITAL.

Hussam Albardan[1], Mohamad Jamil Almajzoub[2]*, Oubadah Aldaher[2], Ammar Albghdadi[2] and Mohamad Shaaban[2]

[1]Prof. Department of Pulmonology. Damascus University. Syrian Arab Republic.
[2]M.D Faculty of Medicine, Syrian Private University. Damascus. Syrian Arab Republic.

***Corresponding Author: Mohamad Jamil Almajzoub**

M.D Faculty of Medicine, Syrian Private University. Damascus. Syrian Arab Republic.

Article Received on 06/01/2022 **Article Revised on 27/02/2022** **Article Accepted on 17/02/2022**

ABSTRACT

Aim and purpose: Proceeding from the increasing number of cases that visited Damascus Hospital with a story of pleural effusion, it was necessary to conduct a study of the prevalence of these cases, methods of their diagnosis, knowledge of their type, and the measures taken to treat them. **Materials and method:** The research included 103 cases of patients diagnosed with effusions that were collected in a retrograde crowded manner from the archives of Damascus Hospital from 2018-2021, then an electronic form was developed to unload samples, followed by the use of the SPSS-25 program to conduct a descriptive statistic for those cases. **The results:** The average age of patients was 48.49 years, where the percentage of males was the highest at 59.2%, and the majority of the sample was not exposed to risk factors at a rate of 53.4%, while the simple chest x-ray was the most common method of diagnosis with a percentage of 86.4%. As for the type of effusion, exudative effusion was dominant with a percentage of 92.2%, as 94.8% of the exudative effusions had two positive Light's criteria. By switching to the colour of the liquid, red (blood) was the most common with 42.7%. The traumatic cause was the most common cause with a percentage of 30.1%. Concerning the treatment used, chest, blasting was the most commonly used, treatment with a rate of 68%. **Conclusion:** In light of the many medical conditions and challenges facing our medical community, such cases may be critical and life-threatening. Therefore, awareness campaigns should be carried out on the issue of pleural effusions, and taken into account if patients visit the emergency department and not be lenient in diagnostic and therapeutic procedures, and it is necessary to Conduct training seminars for physicians on effusions and how to diagnose them.

BACKGROUND

Definition

Pleural Effusion is the accumulation of fluid in between the parietal and visceral pleura, called the pleura cavity. It can occur by itself or can be the result of surrounding parenchymal disease like infection, malignancy or inflammatory conditions. Pleural effusion is one of the major causes of pulmonary mortality and morbidity.[1]

All healthy humans have a small amount of pleural fluid that lubricates the space and facilitates normal lung movement during respiration. This delicate balance of fluid is maintained by the oncotic and hydrostatic pressure and the lymphatic drainage; disturbances in any one of these systems can lead to a build-up of pleural fluid.[2,3]

Aetiology

Pleural fluid is classified as transudate or exudate based on modified Light's criteria. Pleural fluid is considered an exudative effusion if at least one of the criteria are met.

1. Pleural fluid protein/serum protein ratio more than 0.5
2. Pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio of more than 0.6
3. Pleural fluid LDH is more than two-thirds of the upper limits of normal laboratory value for serum LDH.

Common causes of transudates include conditions that alter the hydrostatic or oncotic pressures in the pleural space like congestive left heart failure, nephrotic syndrome, liver cirrhosis, hypoalbuminemia leading to malnutrition and the initiation of peritoneal dialysis.[4]

Common causes of exudates include pulmonary infections like pneumonia or tuberculosis, malignancy, inflammatory disorders like pancreatitis, lupus, rheumatoid arthritis, post-cardiac injury syndrome, chylothorax (due to lymphatic obstruction), hemothorax (blood in pleural space) and benign asbestos pleural effusion.

Some of the less common causes of pleural effusion are a pulmonary embolism which can be exudate or transudate, drug-induced (e.g., methotrexate, amiodarone, phenytoin, dasatinib, usually exudate), post-radiotherapy (exudate), oesophagal rupture (exudate) and ovarian hyperstimulation syndrome (exudate).[5]

Risk Factors

The following diseases may cause pleural effusion:

- Heart failure
- Bacterial pneumonia
- Lung cancer and other tumours with lung metastases
- Pulmonary embolism
- Radiation therapy to the chest
- Nephrotic syndrome
- Hypothyroidism
- Ovarian tumours
- Tuberculosis
- Connective tissue disease (for example, rheumatoid arthritis, lupus)
- Rarely: heart attack, acute pancreatitis, mesothelioma, sarcoidosis, yellow-nail syndrome, familial Mediterranean fever.[6]

Symptoms

Some patients with pleural effusion have no symptoms, with the condition discovered on a chest x-ray that is performed for another reason. The patient may have unrelated symptoms due to the disease or condition that has caused the effusion. Symptoms of pleural effusion include:

- Chest pain
- Dry, nonproductive cough
- Dyspnea (shortness of breath, or difficult, laboured breathing)
- Orthopnea (the inability to breathe easily unless the person is sitting up straight or standing erect).[7]

Diagnosis

The tests most commonly used to diagnose and evaluate pleural effusion include:

- Chest x-ray
- Computed tomography (CT) scan of the chest
- Ultrasound of the chest
- Thoracentesis (a needle is inserted between the ribs to remove a biopsy, or sample of fluid)
- Pleural fluid analysis (an examination of the fluid removed from the pleura space)
- When the pleural effusion has remained undiagnosed despite previous, less-invasive tests, thoracoscopy may be performed. Thoracoscopy is a minimally invasive technique, also known as video-assisted thoracoscopic surgery, or VATS, performed under general anaesthesia that allows for a visual evaluation of the pleura). Often, treatment of the effusion is combined with diagnosis in these cases.[7]

Treatment

- Large pleural effusions, causing severe breathlessness, are drained, by a needle in an acute emergency, or otherwise by chest drain inserted under local anaesthetic.
- Malignant pleural effusions may be recurrent. They are treated by drainage, followed by the installation of certain chemicals into the pleural space which helps stick the two layers of pleura together, to stop further fluid from accumulating.
- Other effusions are treated by treating the underlying cause.[8]

Method

The research included 103 cases of patients diagnosed with effusions that were collected in a retrograde crowded manner from the archives of Damascus Hospital from 2018-2021, then an electronic form was developed to unload samples, followed by the use of the SPSS-25 program to conduct a descriptive statistic for those cases.

Descriptive statistic

It is a survey of the spread of all the studied variables, by determining the percentages and adding some graphs to make the results better.

Statistical analysis

This part aims to present the results of the study by determining the percentages of each studied variable at each of its levels (Distribution of the study sample according to; Age, Gender, Risk Factors, Diagnosis, Type of Effusion, Positivity of Light's criteria, Fluid colour, Causes of Effusion, Treatments, Past Medical History)

RESULTS

- 103 Patients the average of their ages is 48/49.
- 59.2% of them were male and 40.8% were Female.
- 53.4% of our patients don't have risk factors, 42.6% are smokers and nonalcoholic, 3% are smokers and alcoholic and the remaining 1% is alcoholic and nonsmoker.
- The most used test was CXR 86.4% of the tests done, CT was the second most used test 45.6% of the tests done, Thoracentesis 23.3% of the tests done, Thoracoscopy 18.4% of the tests done), Ultrasound of the chest 15.5% of the tests done, finally other tests were 9.7% of the tests done.

Tests	Number of patients	Percentages
CXR	89	86.4
CT	47	45.6
Thoracentesis	24	23.3
Thoracoscopy	19	18.4
Ultrasound of the chest	16	15.5
Other	14	9.7

(NOTE: Some patients were tested with more than one test)

- Exudate effusion was diagnosed in 92.2% of our patients and Transudate effusion was diagnosed 7.8%.

	Number of patients	Percentages
Exudate	95	92.2
Transudate	8	7.8
Total	**103**	**100**

- **According to Light's criteria**

1. Pleural fluid protein/serum protein ratio more than 0.5 and Pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio of more than 0.6 were positive in 94.8% of the Exudate effusion patient.
2. Pleural fluid protein/serum protein ratio more than 0.5 only were positive in 4.2% of the Exudate effusion patient.
3. Pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio of more than 0.6 only were positive in 1.1% of the Exudate effusion.

On the other hand, the Transudate effusion patient was negative to all Light's criteria.

		Number of patients	Percentages
Exudate	Pleural fluid protein/serum protein ratio more than 0.5 and Pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio of more than 0.6	90	94.8
	Pleural fluid protein/serum protein ratio more than 0.5	4	4.2
	Pleural fluid lactate dehydrogenase (LDH)/serum LDH ratio of more than 0.6	1	1.1
	Total	**95**	**100**

- According to the fluid colour, the effusion of the red color fluid has the most percentage with 42.7%, the effusion of the Turbid yellow fluid was 36.8%, the effusion of the Clear yellow fluid was 17.5%, and other effusions with different colours was 3%.

	Number of patients	Percentages
Red	44	42.7
Turbid Yellow	38	36.8
Clear Yellow	18	17.5
Others	3	3
Total	103	100

- According to the causes of Pleural effusion in our study, Traumatic was the most with 30.1%, Tumor was 22.3%, Septic pneumonia was 32.1%, Cardio and Renal causes was 5.8% and other causes was 9.7%.

	Number of patients	Percentages
Traumatic	31	30.1
Tumor	23	22.3
Septic pneumonia	33	32.1
Cardio and Renal	6	5.8
Others	10	9.7
Total	**103**	**100**

- According to treatments, Chest blasting was the most used by 68%, Medicine and Diuretics was 30.1%, Thoracentesis was 15.5%, Monitoring was1.9% and other treatments was 18.4%.

	Number of patients	Percentages
Chest Blasting	70	68
Medicine and Diuretics	31	30.1
Thoracentesis	16	15.5
Monitoring	2	1.9
Others	25	24.2

(NOTE: Some patients were treated with more than one way)

- Finally, according to the patient's medical history most of them the don't have any surgical, medical and medicine past history.

DISCUSSION

The average age of the 103 patients was 48.49 years, where the percentage of males was the highest at 59.2%, (61male patients) and 40.8% females (42 female patients), the majority of the sample were not exposed to risk factors at a rate of 53.4%, while the simple chest x-ray was the most common method of diagnosis with a percentage of 86.4%. As for the type of effusion, exudative effusion was dominant with a percentage of 92.2%, as 94.8% of the exudative effusions had two positive Light's criteria. By switching to the colour of the fluid, red (blood) was the most common with 42.7%. The traumatic cause was the most common cause with a percentage of 30.1%. Concerning the treatment used, chest, blasting was the most commonly used, treatment with a rate of 68%.

Most of our patient's don't have any surgical, medical or medical history.

CONCLUSION

In light of the many medical conditions and challenges facing our medical community, such cases may be critical and life-threatening. Therefore, awareness campaigns should be carried out on the issue of pleural effusions, and taken into account if patients visit the emergency department and not be lenient in diagnostic and therapeutic procedures, and it is necessary to Conduct training seminars for physicians on effusions and how to diagnose them**.**

Declarations

Ethics approval and consent to participate

All the patients who admitted to the Department gave a written consent and know that their medical information could be a part of clinical study.

The ethical approval also took from the faculty of medicine Syrian Private University.

Consent for publication

Not applicable

Availability of data and materials

All data generated or analysed during this study are included in this published article, and for any additional information they are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

Funding

No source of Funding.

Authors' contributions

All the authors participate in data collection and writing the manuscript, also helping in statistical issues and the revision of the paper.

ACKNOWLEDGEMENTS

Not applicable.

REFERENCES

1. Kugasia IAR, Kumar A, Khatri A, Saeed F, Islam H, Epelbaum O. Primary effusion lymphoma of the pleural space: Report of a rare complication of cardiac transplant with review of the literature. Transpl Infect Dis., Feb., 2019; 21(1): e13005.
2. Karki A, Riley L, Mehta HJ, Ataya A. Abdominal etiologies of pleural effusion. Dis Mon., Apr, 2019; 65(4): 95-103.
3. Riley L, Karki A, Mehta HJ, Ataya A. Obstetric and gynecologic causes of pleural effusions. Dis Mon., Apr, 2019; 65(4): 109-114.
4. Lepus CM, Vivero M. Updates in Effusion Cytology. Surg Pathol Clin., Sep, 2018; 11(3): 523-544.
5. Bedawi EO, Hassan M, Rahman NM. Recent developments in the management of pleural infection: A comprehensive review. Clin Respir J., Aug, 2018; 12(8): 2309-2320.
6. Kumar P, Clark M. Clinical Medicine. Fourth Ed. WB Saunders, 1998; 825.
7. "Pleural effusion." MedLine Plus Medical Encyclopedia. Accessed Oct. 26, 2006.
8. Talley NJ, O'Connor S. Clinical examination. Third Ed. MacClennan & Petty, 1996; 120.