



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.1480900>Available online at: <http://www.iajps.com>

Research Article

**DOXYCYCLINE FOR PLEURODESIS EFFICACY IN THE
MALIGNANT PLEURAL EFFUSION (PE) CASES WITH
RESPECT TO AGE, GENDER & VOLUME STRATIFICATION**¹Sobia Jabeen, ²Dr Aaisha, ³Dr. M. Umer Mumtaz¹Medical Officer, BHU 59 MB²DHQ Hospital, Okara³Jinnah Hospital, Labore**Abstract:**

Objective: We aimed to assess the Doxycycline for pleurodesis efficacy in the Malignant Pleural Effusion (PE) patients with respect to age, gender and volume stratification.

Material and Methods: We held this case series, cross-sectional research at Pulmonology Department of Services Hospital, Lahore from February to November 2017. We included both male and female cases of malignant Pleura Effusions (PE) with an age factor of thirty and above years. We carried out Pleurodesis through Doxycycline capsules. At an initial stage, we drained pleural cavity fluid through an intercostal chest tube (ICT) and after that made a paste of ten capsules in fifty millilitres of normal saline (capsules 100 mg each). An expert staff injected the saline into pleural space. Fluid collection completed after three hours clamping. These patients had a follow-up visit on a coming day with the fluid collection (100 ml) and chest USG. We labelled it as efficacious.

Results: We selected a total of fifty malignant pleural effusion (MPE) patients with a mean age factor of (45.67 ± 11.89) years. Patients were both male and female respectively 23 and 27 having respective proportions of (46%) and (54%). Seven cases had a common aetiology of CA breast. There were 21 cases of Doxycycline efficacy as periodizing agent (42%). No significant variation was visible among the male and female population and age regarding efficacy (P-Values 0.88 & 0.83) respectively. Higher efficacy was significant in the pleural effusion volume (≤ 1) in nine cases out of twelve (75%) (P-Value = 0.001).

Conclusion: Doxycycline for pleurodesis efficacy in the malignant pleural effusion (MPE) patients was significant and optimal and it was also high in the effusion cases having less or equal to one litre.

Keywords: Malignant Pleural Effusion (MPE), Fluid, Saline, Chest, Clamping, Efficacy, Pleurodesis and Doxycycline.

Corresponding author:

Sobia Jabeen,
Medical Officer,
BHU 59 MB

QR code



Please cite this article in press Sobia Jabeen et al., *Doxycycline for Pleurodesis Efficacy in the Malignant Pleural Effusion (PE) Cases With Respect To Age, Gender & Volume Stratification.*, Indo Am. J. P. Sci, 2018; 05(11).

INTRODUCTION:

Pleural Effusions (PE) span over a wider range of the underlying complications and disorders in all the departments. An ultimate solution is the intervention of the radiologists in order to drains and management at Pulmonology Department. There are numerous challenges associated with the therapeutic and diagnostic interventions of Malignant Pleural Effusion (MPE) [1 – 2]. Numerous symptoms and signs such as breath shortness, chest pain and exertional dyspnea, underlay MPE; whereas, it may also not associate with the incidence of weight loss, malaise and fever. MPE needs draining such as many other effusions to avoid lung compression which is a source of formation of adhesion and secondary infection. Pleurodesis is a process which involves the creation of iatrogenic inflammation in the pleural cavity in order to approximate both surfaces of the pleural to avoid fluid accumulation in the cavity [3 – 4].

Pleuridising agents are available in variety and a wide range in the open market which consists of talc in the form of poudrage, slurry, fluorouracil, tetracycline, bleomycin etc. [5]. All of them possess certain merits and demerits and positives and negative aspects. Doxycycline is one of many an orally taken antibiotic; it also easily procurable at feasible rates. Its effectiveness and success rate are also confirming from various literary sources [5 – 7].

MATERIAL AND METHODS:

With an objective to assess the Doxycycline for pleurodesis efficacy in the Malignant Pleural Effusion (PE) patients with respect to age, gender and volume stratification; we held this case series, cross-

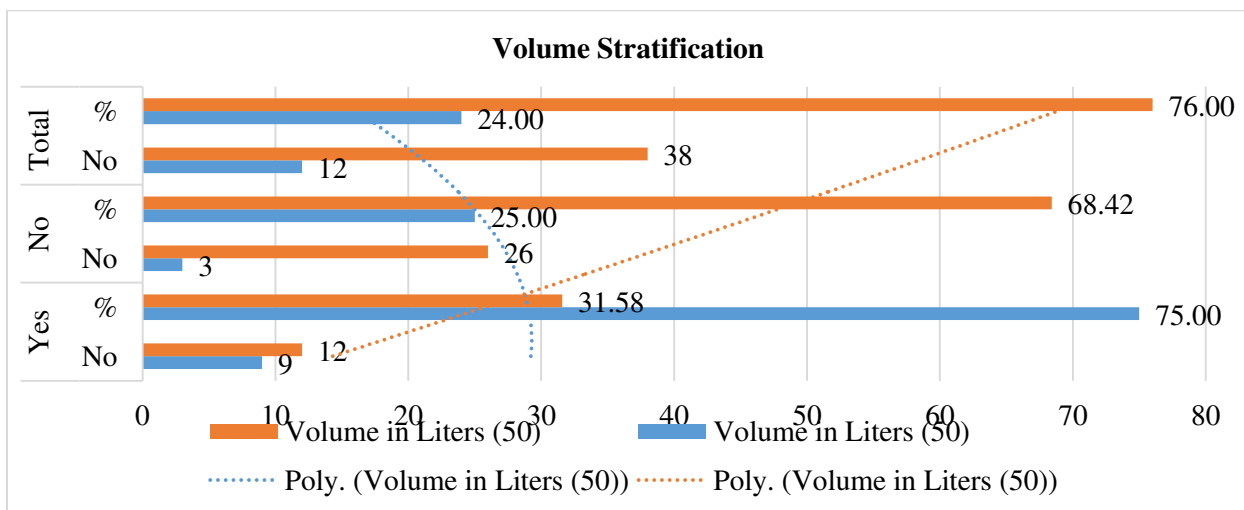
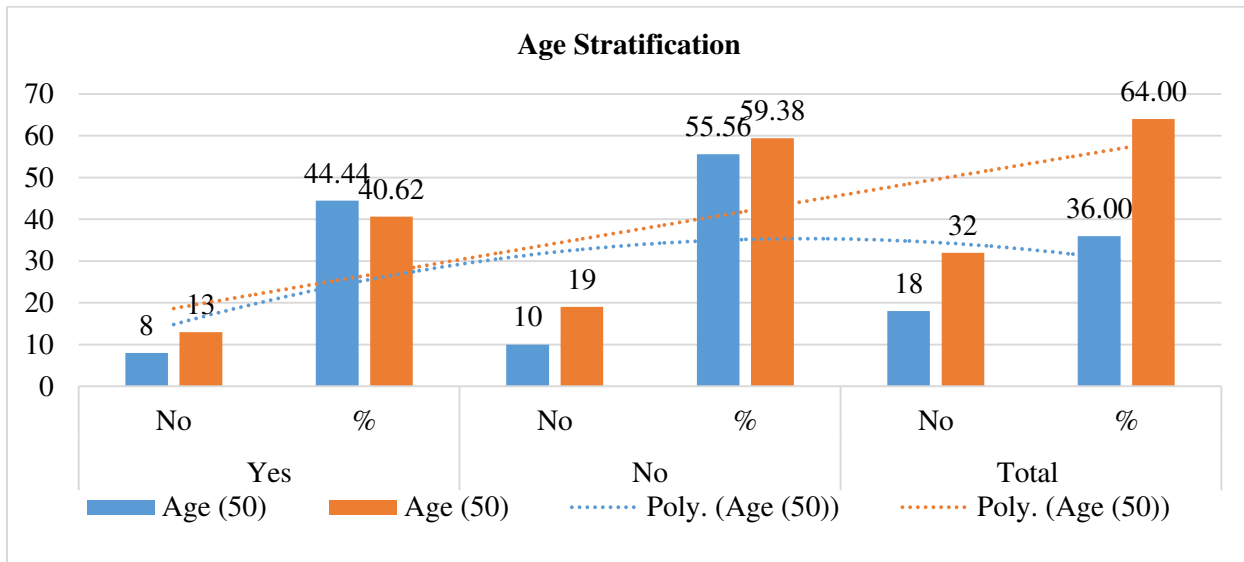
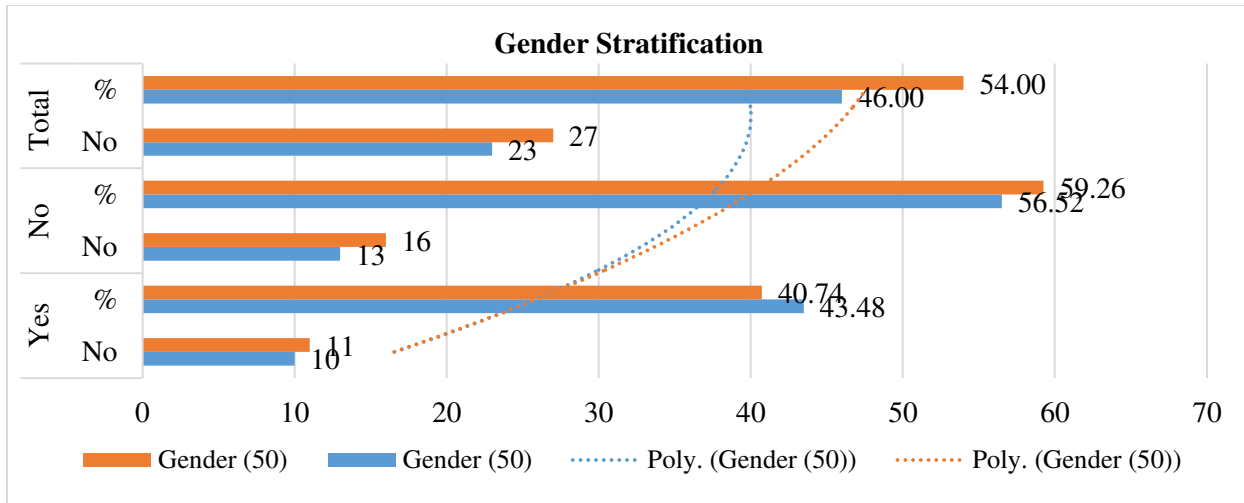
sectional research at Pulmonology Department of Services Hospital, Lahore from February to November 2017. We included both male and female cases of malignant Pleura Effusions (PE) with an age factor of thirty and above years through non-probability sampling technique. We did not include any case with traumatic effusion and transudative pleural effusion (CLD, CRF and CCF). We carried out Pleurodesis through Doxycycline capsules. At an initial stage, we drained pleural cavity fluid through an intercostal chest tube (ICT) and after that made a paste of ten capsules in fifty millilitres of normal saline (capsules 100 mg each). An expert staff injected the saline into pleural space. Fluid collection completed after three hours clamping. These patients had a follow-up visit on a coming day with the fluid collection (100 ml) and chest USG. We labelled it as efficacious. The researcher analyzed the research outcomes on SPSS and Chi-Square Test with a significant P-Value under 0.05.

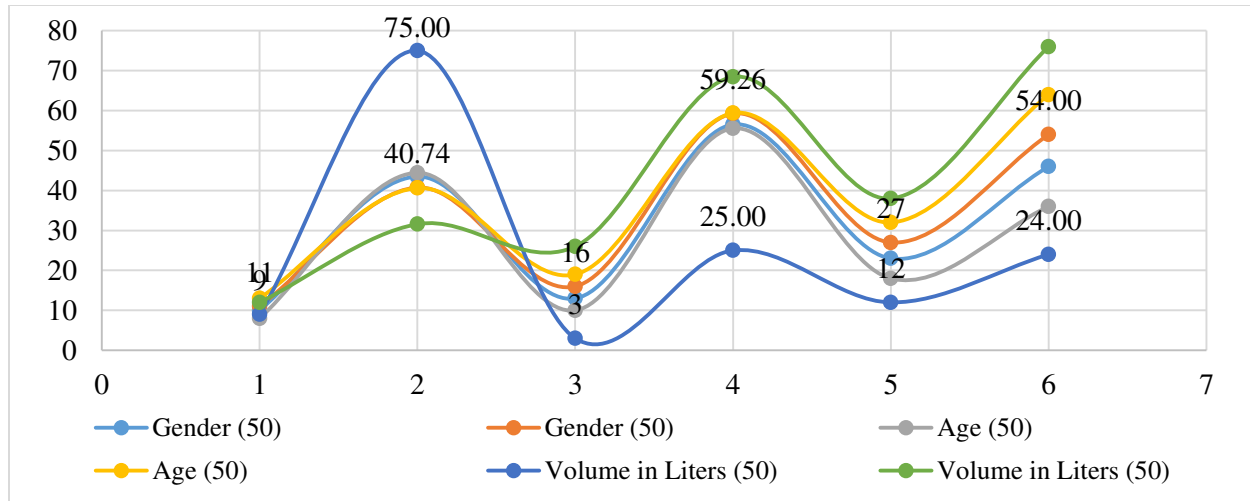
RESULTS:

We selected a total of fifty malignant pleural effusion (MPE) patients with a mean age factor of (45.67 ± 11.89) years. Patients were both male and female respectively 23 and 27 having respective proportions of (46%) and (54%). Seven cases had a common aetiology of CA breast. There were 21 cases of Doxycycline efficacy as periodizing agent (42%). No significant variation was visible among the male and female population and age regarding efficacy (P-Values 0.88 & 0.83) respectively. Higher efficacy was significant in the pleural effusion volume (≤ 1) in nine cases out of twelve (75%) (P-Value = 0.001) as reflected in the tabular data and graphical representation.

Table: Age, Gender and Volume Stratification

Gender / Age / Volume Stratification		Yes		No		Total		P-Value
		No	%	No	%	No	%	
Gender (50)	Male	10	43.48	13	56.52	23	46.00	0.88
	Female	11	40.74	16	59.26	27	54.00	
Age (50)	30 – 50	8	44.44	10	55.56	18	36.00	0.83
	Above 50	13	40.62	19	59.38	32	64.00	
Volume in Liters (50)	1 or Less	9	75.00	3	25.00	12	24.00	0.001
	Above 1	12	31.58	26	68.42	38	76.00	





DISCUSSION:

The management of MPE (Malignant Pleural Effusions) is very much difficult as its accumulation is aggressive. The management of the disease is difficult because of associated numerous co-morbid conditions and disease severity. There is another issue of its reoccurrence time and again. There is always a requirement of an effective and safe agent with decreased side effects and long-lasting curing affects to treat such patients.

There were 21 cases of Doxycycline efficacy as periodizing agent (42%) in this particular cross-sectional and case series trial. Our efficacy is a bit low then the previously reported efficacies. Porcel reported an efficacy of fifty-five percent in their research held on thirty-four patients of MPE [8]. Costa followed same research design and reported the efficacy in about sixty percent cases. The efficacy was a bit low than then our reported rate which is because we did not employ negative suction of pressure after pleurodesis. Better outcomes were significant and it was also in practice at many other well-equipped centres [9].

Another local research also reported similar outcomes which make our findings even stronger as doxycycline effectiveness and success rate was about (72.7%) [10]. Heffner also reported similar outcomes with a success rate of (78%) [11]. Variations in the increased or decreased efficacy and success rate may also have a relation with disease severity and stage.

A higher success rate was significant in the cases with pleural effusion volume equal or under one litre; as nine out of twelve cases had the same observation with a proportion and P-value of (75%) and (0.001)

respectively. Previous research studies also endorse these outcomes even as they did not employ such cut-off values but had higher levels of pleural effusion (PE) degree and decreased efficacy rate. This fact has a possible explanation of underlying pathophysiology which is very much difficult to approximate the pleura and failure rate will also be very much high in such cases [12 – 13].

CONCLUSION

Doxycycline for pleurodesis efficacy in the malignant pleural effusion (MPE) patients was significant and optimal and it was also high in the effusion cases having less or equal to one litre.

REFERENCES:

1. Costa JS, Lombart ML, Chiner E, et al. Pleurodesis in patients with malignant pleural effusions: efficacy of doxycycline. Chest (2006) 244S Poster Presentations Wednesday, October 25, 2006
2. Mohamed KH, Hassan OA. A new look at an old agent for pleurodesis. Egypt J Chest Dis Tuberc. 2013;62(4):617-20.
3. Heffner JE, Standerfer RJ, Torstveit J, et al. Clinical efficacy of doxycycline pleurodesis Chest. 1994; 105:1743–47.
4. Elnady M, Sakr A. Safety and efficacy of pleurodesis with thoracoscopic doxycycline poundage in malignant pleural effusion. Chest. 2011;140(4):697A.
5. Lee YCG, Baumann MH, Maskell NA, et al. Pleurodesis practice for malignant pleural effusions in five English speaking countries: survey of pulmonologists. Chest.2003;124:2229–2238
6. Musani AI. Treatment options for malignant

- pleural effusion. *Curr Opin Pulm Med.* Jul2009;15(4):380-87.
7. Herrington JD. Chemical pleurodesis with doxycycline. *Pharmacotherapy.*1996;16(2):280–85.
 8. Porcel JM, Salud A, Nabal M, et al. Rapid pleurodesis with doxycycline through a small-bore catheter for the treatment of metastatic malignant effusions. *Support Care Cancer.* 2006;14(5):475-78.
 9. Albert RK, Spiro SG, Jett JR. Clinical respiratory medicine. In: *Pleural V. Effusion, emphysema, and pneumothorax.* Philadelphia: Elsevier; 2008. P. 860-3.
 10. Antunes G, Neville E, Duffy J, Ali N. BTS Guidelines for the management of malignant pleural effusions. *Ann Intern Med.* 1994; 120:56-64.
 11. Shaw P, Agarwal R. Pleurodesis for malignant pleural effusions. *Cochrane Database Syst Rev.* 2004;(I):CD 002916.
 12. Vargas FS, Teixeira LR, Antonangelo L, Vaz MA, Carmo AO, Marchi E, et al. Experimental pleurodesis in rabbits induced by silver nitrate or talc. *Chest.*2001;119:1516-20.
 13. Agarwal R. Iodopovidone an inexpensive and effective agent for chemical Pleurodesis. *Lung Cancer.* 2007; 55:253-54.