



Scholars Research Library

Der Pharmacia Lettre, 2016, 8 (11):24-26
(<http://scholarsresearchlibrary.com/archive.html>)



Modern methods for sanitation of pleural cavity in patients with nonspecific pleural empyema

Tarasenko L.G.¹, Makarov V.V.¹, Syrovaya A.O.¹, Makarov V.A.¹,
Ponomareva E.V.², Kozub S.N.¹.

¹Kharkiv national medical university, Kharkiv, 61022, Kharkiv, 4 Nauky Avenue, Ukraine

²V.T. Zaytsev Institute of General and Emergency Surgery of NAMS of Ukraine, 61018, Kharkiv,
1 Balakireva vyezd, Ukraine

ABSTRACT

The aim of this study is to perform comparative study of efficiency of topical application of decamethoxine and anti-infective drugs in patients with nonspecific pleural empyema. This study is based on the analysis of treatment outcomes in 51 patients with acute pleural empyema who received medical treatment in thoracic department of V.T. Zaytsev Institute of General and Emergency Surgery of NAMS of Ukraine from 2010 to 2015 years. Absence of displacement of causative agents from pleural discharge in patients of main group was observed in 8 – 10 days while in control group this was in 13 – 15 days. Application of proposed pleural cavity sanitation procedure allowed to reduce length of stay in hospital for patients of main group in a mean of 7.2 ± 1.3 bed days.

Key words: acute pleural empyema, sanitation of pleural cavity.

INTRODUCTION

Pyo-inflammatory diseases of pleura is an actual problem of thoracic surgery [1]. The prevalence of non-specific diseases of the lungs and pleura, associated with them incapacitation, invalidism, mortality rank 3 - 4 place among other diseases. But relatively soon such diseases are ahead of cardiovascular diseases and malignant neoplasms according to cost-effectiveness ratio calculated by foreign authors [5, 6].

Treatment outcomes of patients with acute pleural empyema stay unfavourable. There is a decreasing of mortality from 30% to 14.8% when applying of conservative methods of treatment (modern antimicrobial therapy, puncture therapy et al., but a number of chronic processes did not decrease [1, 5]. Postoperative mortality at foresaid pathology remains high and ranges from 18% to 43% despite of constant development of surgical procedures, anesthetic and intensive care management [1, 7].

Over recent years preference is given to the use of the methods of minor surgery in treatment of acute pleural empyemas. These procedures conduce improvement of treatment outcomes, decrease of complications, reduction of treatment periods but a matter of choice of effective antiseptic for topical sanitation of acute abscess cavity still remains undetermined [1].

In literature there are data about ability to use antiseptic decamethoxin for topical sanitation in pyo-inflammatory diseases. Experimental investigations showed that given antiseptic has evident bactericidal activity against gram-positive, gram-negative and anaerobic microflora. Fungicidal, virucidal and sporocidal activity is also observed [2, 3]. During experimental investigations and in clinical practice anti-inflammatory effect of decamethoxin is observed, mechanism of which is explained by the inhibition of serotonin production by the cells and decrease in exudation.

Desensitizing and relaxing effect of this drug was also observed². Positive property of decamethoxin is its ability to increase susceptibility of microorganisms to antibiotics. Literature data gives evidence of inhalational application of decamethoxin in acute pneumonias and also in topical treatment of abscesses, carbuncles, phlegmons of soft tissues [2, 3].

Comparative study of efficiency of intrapleural administration of decamethoxin and antibiotics according to sensitivity is an important point.

The aim of this study is to perform comparative study of efficiency of topical application of decamethoxin and anti-infective drugs in patients with nonspecific pleural empyema.

MATERIALS AND METHODS

This study is based on the analysis of treatment outcomes in 51 patients with acute pleural empyema who received medical treatment in thoracic department of V.T. Zaytsev Institute of General and Emergency Surgery of NAMS of Ukraine from 2010 to 2015 years. All patients had undergone thoracostomy.

Main group consisted of 26 patients with acute empyema. On the background of the traditional methods of treatment patients underwent pleural cavity sanitation with decamethoxine solution. Control group consisted of 25 patients with discussed pathology. They underwent traditional therapy and pleural cavity sanitation with antibiotics solutions according to sensitivity.

In the main group there were 19 men and 7 women. In turn, there were 20 men and 5 women in the control group. Age of patients of main and control groups does not differ significantly and was within the limit of 20 to 63 years.

There was unilateral localization of acute pleural empyema in all patients. Right sided localization of acute pleural empyema was observed in 37 patients while left sided localization was in 14 patients.

All patients underwent radiological investigation (multiplanar sciagraphy, roentgenography) in dynamics throughout the whole treatment process.

Antibiotic sensitivity was studied by disk-diffusion method. Data processing was done by the method of variation statistics using Student-Fischer test [4].

RESULTS AND DISCUSSION

Clinical performance of disease in patients of main and control groups was accompanied with expressed intoxication. All patients complained of temperature rise, dyspnea, thoracalgia on the side of lesion.

Str. Pyogenes were plated in 9 patients, *Str. Pneumoniae* was plated in 7 patients. *Staphylococcus aureus* was also isolated in 7 observations. *Pseudomonas aeruginosa* was determined in 6 studies. *Str. Viridans* was determined in 5 patients. *Klebsiella pneumoniae* was isolated in 3 patients while *Escherichia coli* was determined in 3 patients. Associations of microorganisms were isolated in 12 patients it is notable that *Candida albicans* was detected in 8 cases.

Str. Pyogenes, *Staphylococcus aureus* was sensitive to ceftriaxone while *Str. Pneumoniae* and *Str. Viridans* was sensitive to oxacillin, *Pseudomonas aeruginosa* – to ciprofloxacin, ceftriaxone. *Escherichia coli*, *Klebsiella pneumoniae* were sensitive to gentamicin, ceftriaxone and ciprofloxacin.

During the determination of sensitivity of microbial associations to anti-infective drugs it was observed that majority of antibiotics inhibit growth of one microorganisms and they are ineffective against the others.

Sensitivity of both microorganisms to ceftriaxone was determined only in one examination at combination of *Str. Pyogenes* with *Escherichia coli*. Obtained results of microbiological test stress actuality of topical sanitation of acute pleural empyema with effective antiseptic. In its turn, decamethoxin exhibits bactericidal and fungicidal effects against microbial strains isolated in main group.

General conservative therapy in both groups included antimicrobial therapy in accordance with sensitivity of microflora, desensitizing, medicinal products for desintoxicated therapy, anti-inflammatory and nosotropic agents, infusions of protein, salt and energetic solutions when applicable - blood substitutes, inhalations.

Thoracostomy was started from the multiaxial roentgenoscopy of thoracic organs during which size of empyema cavity and topography was determined. Puncture of empyema cavity was performed in low point.

Input of purulent discharge was a criterion of presence of needle in cavity. Thoracostomy was performed under thoracoscopic control or “blindly”. Surgery was performed as under local anaesthesia and intravenous anesthesia. Choice of anesthesia was caused by the localization of empyema cavity and general state of patient.

Patients of main group underwent daily empyema cavity sanitation with decamethoxin solution several times to “clear washings”. After obtaining of “clear washings” cavity was filled with decamethoxin solution on two thirds (based on the injected quantity of solution at the lavement). Exposure was made in 1 hour by the closing of drain tube. Filling of cavity with solution on two thirds was sufficient for cavity sanitation. Drain tube was opened in the cases of appearance of feeling of fullness in patient in the projection of cavity. Empyema cavity sanitation was done daily. A number of pleural cavity sanitaions was an average of 9 to 15.

To sanitize empyema cavity in patients of control group physiological solution with dissolved antibiotics was used. Empyema cavity was washed with two antibiotics in 4 cases, when there were microbial associations. If there was *Candida albicans* in the microbial associations, pleural cavity was additionally sanitized with fuciz solution.

After the treatment, body temperature in patients of main group returned to normal in a mean period of 9 – 12 days but in a control group normalization was in 14 – 15 days. Absence of displacement of causative agents from pleural discharge in patients of main group was observed in 8 – 10 days while in control group this was in 13 – 15 days.

Transfer of acute pleural empyema to chronic form in patients of main group was not found after performance of local topical treatment in our examinations. Complications associated with this procedure were not noted.

Transfer of acute pleural empyema to chronic form was observed in 3 patients of control group. As a result, patients were operated on, decortication of lung was performed. Dry residual cavity formed in 2 patients and they were discharged from hospital. Discussed complications were observed in patients for whom associations of microorganisms were isolated from pleural cavity at bacterial swab test.

Application of proposed pleural cavity sanitation procedure allowed to reduce length of stay in hospital for patients of main group in a mean of 7.2 ± 1.3 bed days.

CONCLUSION

Comparative study of local administration of decamethoxin and anti-infective drugs in patients with acute pleural empyema showed that using of proposed procedure in patients of main group normalizes body temperature, reduces period of stay in hospital an average of 7 days. Complications of the treatment were not observed.

Results of conducted research indicate efficiency of application of proposed pleural cavity sanitation procedure in patients with acute pleural empyema. This procedure is an upcoming trend of topical treatment of discussed pathology especially under isolation of microbial associations in pleural fluid.

REFERENCES

- [1] V.V. Boiko, A.K. Florikyana Pyo-inflammatory diseases of lungs and pleura. Kharkov: Prapor, **2007**; 576. [In Russian]
- [2] V.P. Kovalchuk, M.I. Gumenuk, V.V. Bikmirov, M.D. Geliba, K.M. Safronov. *Bulletin of Vinnitsa National Medical University*, **2002**, 2; 292 – 294. [In Russian]
- [3] E.P. Konovalov, V.N. Terleckiy, N.I. Plyacuk et al. *Clinical surgery*, **2004**, 9; 18 – 20. [In Russian]
- [4] S. N. Lapach, A. V. Chubenko, P. N. Babich Statistical methods in researches formedicine and biology with the use of Excel. Kiev: Morion, **2001**; 408.
- [5] M.E. Cowen, M.R. Johnston. *Compr. Ther*, **1998**, 10; 40 – 45.
- [6] J.E. Neild, S.J. Eykyn, I. Philips. *Quart. J. Med*, **1998**, 224; 875-882.
- [7] Wąsowski Dariusz, Kuźdzał Jarosław, Reifland Agnieszka, Soja Jerzy, Szlubowski Artur, Śladek Krzysztof. *Pol. prz. Chir*, **2002**, 74 (1); 54–60.