Cystic Echinococcosis of the Breast – Diagnostic Dilemma or just a Rare Primary Localization

Ventsislav M. Mutafchiyski1, Georgi I. Popivanov2, Mihail S. Tabakov3, Vladimir V. Vasilev4, Kirien Ts. Kjossev5, Roberto Cirocchi6, Anthony T. Philipov5, Virsavia S. Vaseva7, Georgi T. Baitchev8, Rachko Ribarov9, Marina N. Konaktchieva10

1 Department of Surgery, Military Medical Academy, Sofia, Bulgaria
2 Clinic of Endoscopic, Endocrine Surgery and Coloproctology, Military Medical Academy, Sofia, Bulgaria
3 Clinic of Abdominal Surgery, St Ivan Rilski University Hospital, Medical University, Sofia, Bulgaria
4 Clinic of Plastic Surgery, Military Medical Academy, Sofia, Bulgaria
5 Second Clinic of Surgery, Military Medical Academy, Sofia, Bulgaria
6 Department of Surgery and Surgical Science, University of Perugia, Perugia, Italy
7 Department of Education and Research, Military Medical Academy, Sofia, Bulgaria
8 Clinic of Thoracic Surgery, Military Medical Academy, Sofia, Bulgaria
9 Faculty of Public Health, Medical University, Sofia, Bulgaria
10 Department of Gastroenterology, Military Medical Academy, Sofia, Bulgaria

Corresponding author: Georgi Popivanov, Clinic of Endoscopic, Endocrine Surgery and Coloproctology, Military Medical Academy, 3 Georgi Sofiiski St., Sofia, Bulgaria; E-mail: gerasimpopivanov@rocketmail.com; Tel.: +359 885 521 241

Received: 15 May 2019 ♦ Accepted: 18 July 2019 ♦ Published: 31 March 2020

Citation: Mutafchiyski VM, Popivanov GI, Tabakov MS, Vasilev VV, Kjossev KT, Cirocchi R, Philipov AT, Vaseva VS, Baitchev GT, Ribarov R, Konaktchieva MN. Cystic echinococcosis of the breast – diagnostic dilemma or just a rare primary localization. Folia Med (Plovdiv) 2020;62(1):23-30. doi: 10.3897/folmed.62.e47740.

Abstract

Introduction: Although the liver and lung are the most frequently affected organs in cystic echinococcosis, the cysts may develop in any viscera and tissues. Breast is a rare primary localization with few cases described in the literature. We present an updated and systematic review and discuss the possible mechanisms of spreading, diagnostic and treatment options.

Materials and methods: We performed a literature search in PUBMED using the key words ‘hydatid disease’, ‘cystic echinococcosis’ and ‘breast echinococcosis’ without time limitation. Only studies reporting breast cystic echinococcosis were included.

Results: Overall, 121 cases with cystic echinococcosis and 2 with alveolar echinococcosis were reported. A total of 52 cases were included in the analysis. The mean size of cysts was 5.5 cm (range 1.7-12). The most common clinical presentation was painless lump presented from 4 months to 19 years before the final diagnosis. Most cases had isolated breast CE, few cases had synchronous localizations – femoral, thigh and lung, and previous liver CE. Most were active CL and CE1-2 cysts (72%). Ultrasound was used in 83%, followed by mammography (35%). Fine needle aspiration was reported in 27 cases with positive finding in 59%.

Conclusions: In cases with cystic breast lesions from endemic regions we recommend the US as a gold standard. CT and MRT are more accurate but expensive tools without the potential to change the surgical tactic. In contrast to the other localizations of CE, complete excision of the cysts is the best diagnostic and treatment approach.

Keywords

breast, cystic echinococcosis, hydatid disease
INTRODUCTION

Cystic echinococcosis (CE) is a zoonotic disease with high prevalence in South-Eastern Europe, the Middle East, South Africa, South America and Australia. Although the liver (70%) and lung (20-30%) are the most common primary sites, the cysts may develop in all viscera and tissues (8-10%). Additionally, two cases with alveolar echinococcosis were reported in the literature (from Bulgaria and Turkey). Depending on the developmental stage, the cysts may mimic simple cysts, fibroadenoma, phylloides tumor, inflammatory cancer, mastitis, abscess or rare mammary abnormalities, which should be included in the differential diagnosis.9,10,21,34

MATERIALS AND METHODS

Literature search in PUBMED and Google using the key words ‘hydatid disease’, ‘cystic echinococcosis’, and ‘breast echinococcosis’, without time limitation was performed. Only studies reporting breast CE were included. The following variables were analysed: distribution by continents and country of origin, age, gender, type and duration of the complaints, size and stage of the cysts, synchronous localizations and diagnostic modalities used.

RESULTS

Using all key words, we identified a total of 2646 papers written between 1948 and 2018. Using only ‘breast echinococcosis’ as a key word, we found a total of 127 papers. Of the latter, 40 were excluded because of reporting different other localizations, and 87 were considered eligible. The analysis included a total of 53 full text papers, whereas 34 full text papers were not available, but the cases were included in the total count. The PRISMA flow chart is shown in Fig. 1.

Overall, 121 cases with CE and 2 with alveolar echinococcosis were reported in the literature up to October 2018. The distribution of the cases by continents and countries is given in Figs 2, 3.

There was available information for demography, clinical presentation and diagnostic work-up for 52 cases and they were included in the analysis. All cases but one6 concerned women. The mean age was 40.5 years (range 18-70 yrs). The size of the cysts was 5.5 cm (range 1.7-12 cm). In the vast majority of the cases there was only one cyst, whereas multiple cysts were found in two cases.7,8 The most common clinical presentation was slowly growing painless lump. Abscess was initial presentation in 2 cases.5,10 The lump was presented from 4 months to 19 years before the referral to a specialist. Most cases had isolated breast CE and only in few cases synchronous localizations were presented as follows – femoral (n=1)11, thigh and lung CE (n=1)12, liver (n=2)13,14, lung15, pancreas2, spleen10 in two cases with previous liver16 and lung CE17. Ultrasound (US) was the most frequently used diagnostic modality, whereas computed tomography (CT) and magnetic resonance tomography (MRT) were used in few cases (Fig. 4). Mammography was used in 35% of the cases and has been gradually replaced by US in the last two decades. Fine needle aspiration (FNA) with cytologic examination was positive (scattered hooklets, scolices and laminated membrane) in 59% of the cases (16/27). Excision biopsy was reported in only two cases. In one case elevated CA 19-9 level was noted.18

The cysts were classified according to WHO classification19,20 based on the statement of authors and the available US images or gross specimens (n=50). Most of them were active CL and CE1-2 cysts (72%), 14% were transitional, whereas 14% were inactive. (Fig. 5).

One case refused operation and was followed-up for two years without progression of the cyst.21 There was no sufficient and consistent information regarding the treatment with albendazole – most cases were not treated, some authors reported a 4-week postoperative course, whereas few reported preoperative course. Only few papers reported follow-up studies – there were no recurrences after a mean follow-up of 38 months (3-60).5,10-12,16,22-28

Additionally, two cases with alveolar echinococcosis were reported in the literature (from Bulgaria and Turkey).29,30

DISCUSSION

According to World Health Organization (WHO) the term Cystic Echinococcosis (CE) designates the disease caused by E. granulosus. Unfortunately, the terms ‘hydatid disease’ and ‘hydatid cysts’ are still commonly misused in the literature.31 Bulgaria is a classical endemic region with prevalence 2.37/100 000 and steady increase in incidence from 2.0 to 3.1/100 000 for males and from 2.0 to 3.4/100 000 among women over a span of 45 years (1950-1995). Within the same period, 12343 operated cases were recorded, whereas 556 newly diagnosed cases was registered in 1995. Only two cases with cystic and alveolar breast echinococcosis were reported (0.016%).29,32

The most commonly cited frequency of breast CE is 0.27% of all cases. In fact, we found only 121 cases for the search period. In a series with 661 cases Akcam et al. reported unusual localizations in 20% with breast CE in 0.15% (n=1).33 Depending on the developmental stage, the cysts may mimic simple cysts, fibroadenoma, phylloides tumor, inflammatory cancer, mastitis, abscess or rare mammary abnormalities, which should be included in the differential diagnosis.9,10,21,34
Figure 1. PRISMA 2009 Flow Diagram.
Figure 2. Distribution of cases by continent (n = 121).

Figure 3. Distribution of cases by country.

Figure 4. Distribution of the diagnostic modalities (% of 52 patients).
(MG: mammography, US: ultrasound, CT: computed tomography, MRT: magnetic resonance tomography, FNA: fine needle aspiration, EB: excision biopsy).
In humans, oncospheres released in the bowel penetrate through the intestinal mucosa and enter into the portal venous system. Due to its location, the liver is the most affected organ (70%). In 20-30% of the cases, oncospheres enter systemic blood stream and initially reach the lung, but in fact all tissues could be affected (10%). Another possible way to reach the lung is to enter the lymphatics of the bowel and through the thoracic duct they pass into the superior vena cava. A report from Turkey described an interesting case with extrapleural parasternal dissemination of liver CE in line with the right internal thoracic artery and intercostal vessels. In our view, another possible way for breast involvement is through the lymphatic pathways between liver and breast (Gerota’s pathway), similarly to the liver metastasizing of the breast cancer. Only one case in the present series, however, had previous liver CE and another one had previous lung CE. This finding is in contrast to Akcam et al. who reported synchronous liver CE in 24%, lung CE in 5% and both localizations in 1.5% of all cases with unusual CE.33 Thus, the passing of the systemic blood stream through bowel lymphatics seems to be the most probable route for dissemination.

Mammography is a widely accepted screening tool for breast diseases, despite the fact that it has low specificity. The most common finding in mammography is a ring-shaped dense lesion.36 The recent consensus statement published by WHO Informal Working Group on Echinococcosis (WHO-IWGE) recommended US examination as a very useful screening tool, especially for CE with sensitivity and specificity of 93-98% and 88-90% in endemic areas, respectively.19,20 It is considered a gold standard because it is safe and fast bedside procedure which provides an exact description of the developmental stage of CE and reliable comparison of the results. FNA with cytologic examination could reveal scattered hooklets, scolices and laminated membranes.17,36-43 However, it is non-specific (52% in the present series) and carries a risk for dissemination and serious allergic reactions. Computed tomography usually reveals well-defined unilocular or multilocular cyst with hypodense fluid and peripheral enhancement, whereas on magnetic resonance breast CE appears as hypointense mass with peripheral isointense capsula on T1-weighted and hyperintense with solid hypointense capsula on T2-weighted images.16,36,37,44 Both modalities allow for more precise imaging of the lesions, but actually they are expensive and more importantly, the finding could not change the surgical tactic.5,16,36,37,44-46

In general, the management of CE depends on localization and type of the cysts. For example, inactive (type CE 4 and CE 5) and uncomplicated liver cysts require no treatment. Besides, the total pericystectomy is not always feasible in liver echinococcosis because of the complex liver anatomy. Due to accessibility and relatively simple anatomy of the breast, along with the need for exact differential diagnosis, all suspected cysts in endemic regions are indicated for surgery and the total pericystectomy should be the gold standard. We strongly consider excision biopsy to be the most appropriate diagnostic and therapeutic approach. There was no consistent information in the literature regarding the postoperative treatment with albendazole. In our opinion, in cases with isolated breast CE it is not necessary.

An important limitation of the present study is the lack of search of databases other than PUBMED.

CONCLUSION

The most probable way for an isolated breast involvement is the passing of the systemic blood stream through bowel...
lymphatics. The lymphatics between liver and breast (Gero-
tas' pathway) represents an unique route for dissemination.
In cases with cystic breast lesions from endemic regions we
recommend the US as a gold standard. FNA yield frequently
equivocal results and carries a risk for dissemination, CT
and MRT are more accurate, but expensive tools without
the potential to change the surgical tactic. In contrast to the
other localizations of CE, the complete excision of the cysts
is the best diagnostic and treatment approach and should
be the gold standard. In case with isolated breast CE post-
operative treatment is not necessary.

REFERENCES
1. Cel C, Cel M, Lafić H. Unusual localizations of hydatid disease. Acta Med Austriaca 2003; 30(2): 61-4.
2. Yildirim M, Erkan N, Vardar E. Hydatid cysts with unusual localizations; diagnostic and treatment dilemmas for surgeons. Ann Trop Med Parasitol 2006; 100(2): 137-42.
3. Ahı F, El Fares F, Khiazi D, et al. Unusual localizations of hydatid cysts. Apropos of 40 cases. J Chir (Paris) 1989; 126: 307-12.
4. Gun E, Etti D, Buyuktulancı D, et al. Unusual locations of hydatid disease: a 10-year experience from a tertiary center in Western Turkey. Ann Diag Pathol 2017; 29: 37-40.
5. Uncu H, Ereku S. Hydatid cyst of the breast. Acta Chir Belg 2007; 107: 570-71.
6. Limaiaf M, Bouslama S, Haddad I, et al. Hydatid cyst presenting as a breast lump in a male patient. Pathologica 2013; 105(3): 101-3.
7. Elverici E, Barça A, Erhuner Z, et al. Hydatid cyst: an unusual solid breast mass. Clin Imaging 2013; 37(3): 577-9.
8. Ahmad S, Jalil S, Saleem Y, et al. Hydatid cysts at unusual sites: reports of two cases in the neck and breast. J Pak Med Assoc 2010; 60(3): 232-4.
9. Sheikh S, Akhter R, Bhat S, et al. Primary hydatid disease of breast: a case report. J Parasit Dis 2017; 41(3): 908-11.
10. Thruraratinarn T. Echinococcus breast abscess. Trop Doct 1992; 22(4): 192.
11. Shamim M, Mammary and femoral hydatid cysts. J Pak Med Assoc 2010; 60(8): 687-8.
12. Uysal M, Kilic D, Fındıkçıoğlu A, et al. Coexistence in unusual locations of hydatid cysts: thigh, breast and lung involvement. Int J Infect Dis 2007; 11(5): 470-2.
13. Mirdha B, Biwas A. Echinococcosis: presenting as palpable lumps of breast. Indian J Chest Allied Sci 2001; 43(4): 220-26.
14. Prokopenko O. [Echinococcosis of the breast and liver.] Vestn Rentgenol Radiol 1989; 4: 88-9 [Article in Russian].
15. Maalej S, Bourguiba M, Fennira H, et al. Fortuitous discovery of hydatid cyst of the breast. ]Presse Med 2006; 35(9): 1267-69 [Article in French].
16. Afroz N, Chaurasia J, Maheshwari V, et al. Hydatid cyst: unusual presentation as ‘breast lump’. BMJ Case Rep 2014; 2014: bcr2014204273.
17. Kaplan S, Yegen G, Koc S. Hydatid cyst of the breast diagnosed by fine needle aspiration cytology. Turkish J Pathol 2010; 26(1): 89-90.
18. Yüksel BC, Özel H, Akın T, et al. Primary hydatid cyst of the breast with elevated CA 19-9 level. Am J Trop Med Hyg 2005; 73(2): 368-70.
19. WHO-Informal Working Group. International classification of ultrasound images in cystic echinococcosis for application in clinical and field epidemiological settings. Acta Tropica 2003; 85: 253-61.
20. Brunetti E, Kern P, Vuitton D, Writing Panel for the WHO-IWGE. Expert consensus for the diagnosis and treatment of cystic and alveo-
lar echinococcosis in humans. Acta Tropica 2010; 114: 1-16.
21. Canelo M, Martin M, Mendoza N. Preoperative diagnosis of a breast hydatid cyst using fine-needle aspiration cytology: a case report and review of the literature. J Med Case Rep 2012; 6: 293.
22. Acar T, Yağan Kü, Aydan R. Isolated hydatid cyst of the breast. SMJ 2003; 48(2): 52-3.
23. Yaghan R. Hydatid disease of the breast: a case report and literature review. Am J Trop Med Hyg 1999; 61(5): 714-15.
24. Farrokh D, Hashemi J, Zandi B. Primary hydatid cyst of the breast: a case report. Iran J Radiol 2007; 4(3): 159-62.
25. Masrori I, Azemuddin M, Khan S, et al. Hydatid disease of the breast. Singapore Med J 2010; 51(4): 72-5.
26. Jha A, Gupta P, Wahab S, et al. Sonographic diagnosis of primary hy-
datid disease in the breast: the scroll sign. J Clin Ultrasound 2014; 42(8): 302-4.
27. Sah S, Agrawal C, Khan I, et al. Hydatid cyst presenting as a breast lump. Southeast Asian J Trop Med Public Health 2000; 31(1): 185-6.
28. Bekele A, Firew A. A rare case of hydatid disease of the breast: a case report and review of the literature. Ethiop Med J 2016; 54(1): 37-40.
29. Brachkova J, Enchev M. Echinococcus alveolus in breast. Bulgarian medicine 1999; 7(3,4): 50-53.
30. Albayrak Y, Kargi A, Albayrak A, et al. Liver alveolar echinococcosis metastasized to the breast. Breast Care (Basel) 2011; 6(4): 289-91.
31. Da Silva A. Human Echinococcosis: a neglected disease. Gastroen-	erol Res Pract 2010; doi:10.1155/2010/583297.
32. Dimitrov G. [A case of echinococcosis of the breast.] Khirurgija (So-
fia) 1987; 40(1): 52-54 [Article in Bulgarian].
33. Akcam A, Ulku A, Koltas I, et al. Clinical characterization of unusual cystic echinococcosis in southern part of Turkey. Ann Saudi Med 2014; 34(6): 508-16.
34. Daghlı A, Özerçan M, Kocakos E. Hydatid cyst of the breast mimicking inflammatory carcinoma and mastitis. J Ultrasound Med 2006; 25: 1353-56.
35. Iştimangil T, Toker A, Gorur R, et al. A novel dissemination pathway of hydatid cyst. Eur J Cardiothorac Surg 2002; 21: 1126-9.
36. Alamer A, Aldhlan A, Makanjuola D, et al. Preoperative diagnosis of hydatid cyst of the breast: a case report. Pan Afr Med J 2013; 14: 99.
37. Koc A, Sarici I, Vurdem U, et al. Unusual presentation of hydatid cyst in breast with magnetic resonance imaging findings. Case Rep Med 2017; 2017: 6237435.
38. Öztürk G, Öztürk M, Kabaşalı E. Hydatid disease of the breast. Breast J 2010; 16(2): 204-5.
39. Dogan B, Tükel S, Ceyhan K. Hydatid cyst of the breast. Curr Probl Diagn Radiol 2005; 34(5): 204-5.
40. Dhingra K, Singhal N, Jain S. Unsuspected isolated breast hydatidosis: a cytological diagnosis. Cytopathology 2006; 17(4): 213-5.
41. Vega A, Ortega E, Cavada A, et al. Hydatid cyst of the breast: mam-
mographic findings. AJR 1994; 162: 825-6.
42. Pérez-Alonso P, Jesus Cancelo M, Pardina-González M. Cytological diagnosis of mammary hydatidosis. Breast J 2011; 17(2): 205-6.
43. Charfi S, Khabir A, Ayadi I, et al. [Mammary hydatid cyst diagnosed by fine needle aspiration.] Rev Med Interne Rev 2007; 28(5): 336-38 [Article in French].
44. Taori K, Mahajan S, Hirawat S, et al. Hydatid disease of breast. Indian J Radiol 2004; 14(1): 57-60.
45. Caliskan M, Subasi I, Atak I, et al. Hydatid cyst of the breast. Breast J
Mujawar P, Suryawanshi K, Nikumbh D. Cytodiagnosis of isolated primary hydatid cyst of breast masquerading as a breast neoplasm: A rare case report. J Cytol 2015; 32(4): 270-2.

Kumar A, Kumar A, Gaurav K, et al. A rare case of isolated hydatid cyst of breast. Int J Case Rep 2015; 7: 115-8.

Musaev T, Ravshanov T, Khashimov U. [Echinococcus in the breast simulating a tumor (a case).] Vopr Onkol 1987; 33(6): 87 [Article in Russian].

Papazian D. [Echinococcosis of the mammary gland.] Khirurgija (Mosk) 1955; 6: 68 [Article in Russian].

Ferdmann Z. [Echinococcosis of the breast.] Khirurgija (Mosk) 1950; 4: 70-1 [Article in Russian].

Mirza N, Pamba H, O’Leary P. Hydatid cyst of the breast: case report. East Afr Med J 1979; 56(5): 235-6.

Trabelsi A, Fatnaci R, Ouni F, et al. Hydatid cyst of the breast: a case report. Pathologica 2008; 100(3): 197-8.

Ouedraogo E. Hydatid cyst of the breast: 20 cases. J Gynecol Obstet Biol Reprod 1986; 15: 187-94.

Mouslik R, Settia A, Elalami Y, et al. [Primary hydatid cyst of the breast]. Pan Afr Med J 2012; 12: 104 [Article in French].

Du Plessis J. Hydatid cysts of the breast and parotid gland. S Afr Med J 2012; 102: 337.

Rocek V, Rehulka M. [Hydatid cysts of the breast.] Rozhl Chir 1984; 63(7): 487-89 [Article in Czech].

Viola S, Caruso E, Burrafo F, et al. [A case of primary echinococcosis of the breast.] Minerva Chir 1980; 35(4): 307-11 [Article in Italian].

Vicari F. [Echinococcal cysts of the breast.] Arch Ital Anat Istol Patol 1957; 31(4): 354-9 [Article in Italian].

Liaci G. [Echinococcosis of the breast.]. Acta Chir Ital 1954; 10(2): 141-49 [Article in Italian].

Charlo Dupont T. [Hydatid cyst of the breast.] Med Esp 1958; 40(233):146-50 [Article in Spanish].

Alvarez Y, Lopez R, Sanchez C, et al. [Hydatidosis and cancer of the breast. Report of a case of uncommon association.] Rev Fac Cien Med Univ Nac Cordoba 1985; 43(4): 42-4 [Article in Spanish].

Misic B, Jecian I, Misic G, et al. Breast hydatid cyst – case report. J Bacteriol Parasitol 2017; 8: 2.

Iloki L, Lefebvre G, Darboyo Y, et al. [Hydatid cyst of the breast. Case report.] Rev Fr Gynecol Obstet 1992; 87(1): 35-38 [Article in French].

Vega C, Rodriguez H. [Hydatid cyst of the breast.] Bol Chil Parasitol 1964; 19: 65-66 [Article in Spanish].

Perez J, Castillo P, Henning E, et al. [Breast hydatid cyst. A case report.] Rev Med Chil 1997; 125(1): 66-70 [Article in Spanish].

Vestfrid M, Cabral D, Alarcon V, et al. [Hydatidosis of the breast in the republic of Argentina. Report of 2 new cases.] Rev Clin Esp 1977; 145(2): 149-51 [Article in Spanish].

Durando A, Lianio S, Falcon O. [Hydatid cyst of the breast.] Prens Med Argent 1968; 55(22): 1067-69 [Article in Spanish].

Finocchietto R. [Hydatid cysts of the breast.] Prens Med Argent 1960; 47: 1305 [Article in Spanish].

Blanco E, Morador J, Minetti R. Quiste hidatício de la glândula mamaría. An Ateneo Clin Quir Montev 1948; 14(9): 199-208.

Makki H. Some rare cases of hydatid disease. Br J Clin Pract 1970; 24: 125-9.

Vasenwala S, Verma A, Mehdi R, et al. Echinococcosis involving the breast: diagnosis by fine needle aspiration cytology. Indian J Pathol Microbiol 1996; 39(2): 155-56.
Кистозный эхинококкоз молочной железы диагностика дилемма или только редкая первичная локализация.

Венцислав М. Мутафчийски, Георги И. Попиванов, Михаил С. Табаков, Владимир В. Василев, Кирilen Ц. Кьосев, Роберто Кириччи, Антони Т. Филипов, Вирсавия С. Васева, Георг Т. Байчев, Рачо Рибаров, Марина Н. Конакчиева.

1 Хирургическое отделение, Военно-медицинская академия, София, Болгария
2 Клиника эндоскопической эндокринной хирургии и колопроктологии, Военно-медицинская академия, София, Болгария
3 Клиника абдоминальной хирургии, УМБАЛ “Св. Иван Рилски”, София, Болгария
4 Клиника пластической хирургии, Военно-медицинская академия, София, Болгария
5 Вторая хирургическая клиника, Военно-медицинская академия, София, Болгария
6 Кафедра хирургии и хирургических наук, Университет Перуджи, Перуджа, Италия
7 Отдел “Учебная и научно-исследовательская деятельность”, Военно-медицинская академия, София, Болгария
8 Клиника торакальной хирургии, Военно-медицинская академия, София, Болгария
9 Факультет общественного здравоохранения, Медицинский университет-София, Болгария
10 Кафедра гастроэнтерологии, Военно-медицинская академия, София, Болгария

Абстракт

Введение: Хотя при кистозном эхинококкозе чаще всего поражаются печень и лёгкие, кисты могут развиваться во всех внутренних органах и тканях. Грудь является редкой первичной локализацией, по поводу которой в литературе сообщается лишь о нескольких случаях. Мы представляем обновлённый и систематический обзор и обсуждаем возможные механизмы распространения, диагностические и терапевтические варианты.

Материалы и методы: Мы провели поиск в базе данных PUBMED по ключевым словам «водянка», «кистозный эхинококкоз» и «эхинококкоз молочной железы» без каких-либо ограничений по времени. Были включены только случаи с муковисцидозом.

Результаты: Всего было зарегистрировано 121 случай муковисцидоза. Всего в анализ было включено 52 случая. Средний размер кист составлял 5,5 см (диапазон 1,7-12). Наиболее распространённой клинической картиной была безболезненная опухоль, появившаяся в период от 4 месяцев до 19 лет перед установлением окончательного диагноза. В большинстве случаев имел место изолированный кистозный эхинококкоз (КЭ) молочной железы, в нескольких случаях были синхронные локализации - бедра, бедра и лёгкого, а также ранее существовавший рак печени. Наиболее активными были кисты CL и CE1-2 (72%). УЗИ было использовано в 83%, а затем маммография (35%). Тонкоигольная аспирационная биопсия была зарегистрирована в 27 случаях с положительными результатами в 59%.

Выводы: В случаях с кистозными поражениями молочной железы из эндемичных районов мы рекомендуем применение любого метода диагностики, кроме маммографии и / или ультразвука. КТ и МРТ являются более точными, но дорогостоящими методами без возможности изменения хирургической практики. В отличие от других мест локализации КЭ, тотальное удаление кист является лучшим диагностическим и терапевтическим подходом.

Ключевые слова
Кистозный эхинококкоз, водянка, молочная железа