

BREASTS TRAUMA - CLINICAL AND ECHOGRAPHIC ASPECTS IN THE EMERGENCY ROOM

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Abstract: The paper aims at a clinical and paraclinical analysis of breast traumatism in the Emergency Room, establishing the value and the limits of ultrasonography investigation, in diagnosis algorithm.

Keywords: breast trauma, ultrasonography

Rezumat: Lucrarea își propune o analiză clinică și paraclinică a traumatologiei sânelui, la camera de gardă, subliniind în acest context, valoarea și limitele investigației ultrasonografice, în algo-ritmul diagnostic.

Cuvinte cheie: traumatism sân, ultrasonografie

INTRODUCTION

Studies in breast trauma are few in number, pathology breast cancer being the predominant, due to frequency-specific morbidity and mortality, to the importance and detection in the early stages of specific changes. Succinct attempt to analyze the resulting injuries at this level, the types of damage and traumatic effects and the possibilities of investigation in ER. Morbidity and mortality of specific trauma can be influenced by a correct and complete symptoms evaluation, clinical and imaging.(6) secondary and tertiary prevention in these cases, requiring lower cost system. Current study findings are the result of research conducted at the Unit Receive Emergency (ER) on an interval of 50 months.

TECHNICAL NECESSARY

Possibilities for investigating breast trauma are the mammography, ultrasound, Magnetic Resonance Imaging (MRI), techniques that use radioactive substances :scintimammography, Positron Emission Tomography (PET), Single Photon Emission Computed Tomography (SPECT), Electrical Impedance Scanning (T-scan), thermography, imaging optical, optic-acoustic tomography (experimental stage), microwaves imaging(experimental stage).(9)

In investigatory corollary of the above stated, ultrasonography provides an indisputable advantage, at present, used initially to diagnose the simple cysts an for evaluation of solid formations replacement space(1,5,7,8) the technique became useful in short time even in protocols for screening women with dens breast mammogram, but also guide interventional manoeuvres of puncture-aspiration, biopsy and fixation of yarns presurgical location. Using this method is growing because of its qualities: accessibility, speed, repeatability,

efficiency, low cost, real-time examination, non-invasive, high compliance, good spatial resolution, non-depending on the menstrual cycle-unlike the mammography.(4) The evaluation of patient with breast trauma requires a two-dimensional ultrasound probe of 5-7 MHz; Doppler may improve the assessment; linear electronic transducers dynamic focusing high frequency are most used, in practice using transducers of 7,5 MHz with a resolution of 1 mm lateral and axial 0,5 mm at lower frequencies (5MHz) are useful for massive breasts.

DEFINITION

Trauma itself is defined as a state of physical-mechanical, chemical and biological stress, of variable intensity and duration of breast or its components, with the corresponding morpho-patologic variable and reversibility spontaneous or therapeutic, depending on the aggressor agent. By correlating the lesional type with characteristic manifestations, clinical aspects may vary as follows:

- breast contusion – is a consequence of breast crushing on coastal grille;
- breast-wound by blunt bodies, white guns or fire guns;
- citosteatonecrosis-fat necrosis posttraumatic, caused by outbreaks of haemorrhagic stroke and trauma, bleeding heart, or poor circulation;(11)
- breast-burning-injury, are fairly common, usually associated with burns of chest and face above, may be varying degrees.

The most common causes of breast trauma are:

- local and repeated little injuries;
- external trauma (through hard bodies, blunt agents, guns-fireguns);
- intrabreast injections;
- breast physiotherapy;
- exposure to sun radiations-topless;
- injury of the belt driving through road traffic accidents;
- damage by sports, the lack of specific local protection (martial arts, boxing and others);
- microtrauma by chronic traction through voluminous breast, poorly supported(3);
- the bra-injury;
- injury by traumatic rupture of silicone implants.(2)

CLINICAL ASPECTS

ECHOGRAPHIC SEMIOLOGY

From the anatomic and ultrasound, distinguish the following plans to surface(from the transducers)to the thoracic wall :

- tissue-skin, with a thickness varying between 5 and 20 mm, consisting of two echoic lines separated by an hypoechoic line, represented by derm; nipple located central has a posterior acoustic shadow, which requires supplementary investigation of this space;
- premar adipose tissue (subcutaneous) appears as a layer hipoechogen wide-area areolo breast-growing in dimension in the periphery of the gland;
- Cooper's ligament, appears as a layer hipoechoic discontinued lines echoic;
- fascial surface, forming a band that separate the adipose tissue from the gland;
- glandular tissue, hiperechoic, showing main duct in the form of transsonic lines, or formations round-ovalare in cross section;
- deep fascia, wich appears as a thin strip that separates the echogen mammary gland tissue of chest wall;
- fat-retromammary tissue, narrow, hypoechoic;
- big pectoral muscle, hypoechoic, with ultrasound structure „in the comb”;
- coasts-in the form of arched lines, with acoustic posterior shaddow, wich lies between the muscles intercostals, hypoechoic.(10)

ASSESSMENT ULTRASONOGRAPHY

Current protocols used in Europe and the U.S.A. are using the ACR-classification of BI-RADS (The American College of Radiology), that characterize ACR classification of breast structural type, and BI-RADS classification refers to the type of anatomic of injury; the importance of this classification is major in oncological breast pathology.BI-RADS classification is as follows:

- ACR-1=breast fat in adipose tissue, which represents over 75% full; ultrasound sensitivity is limited to this type;
- ACR-2=breast fibro-adipose (fat tissue between 50% and 75% of structure);
- ACR-3=breast fibro-glandular (glandular tissue between 50% and 75%);
- ACR-4=glandular breast, with predominantly glandular tissue; ultrasound value as a method of investigation is major.

In breast trauma, ultrasound evaluation of structural changes has the following special benefits:

- allow the evaluation of a sensible breast;
- expansion allows the evaluation of lesions;
- clinical follow-evolution, emergence and evaluation of complications of their severity;
- ultrasound-guide aspiration of haematoma.(4)

The appearance of ultrasound in breast trauma is variable, ranging from skin edema (characterized by thickening tissue), until the appearance of diffuse inflammatory, echogenity with increased adipose tissue and fat removal delimitation on normal structures, or until

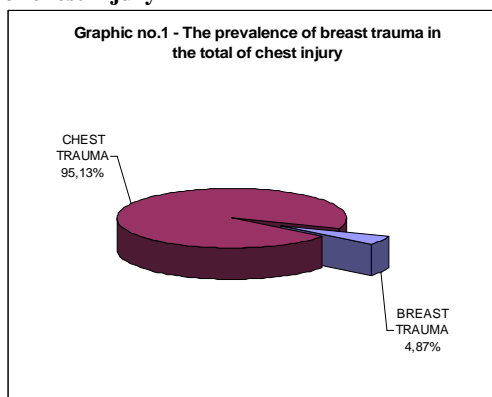
the appearance of complications of breast abscess type, characterized by impure liquid areas, irregular inhomogeneous hypoechogenity-transsonic, bounded imprecisely, accompanied by inflammatory adenopathy.

STATISTICAL STUDY

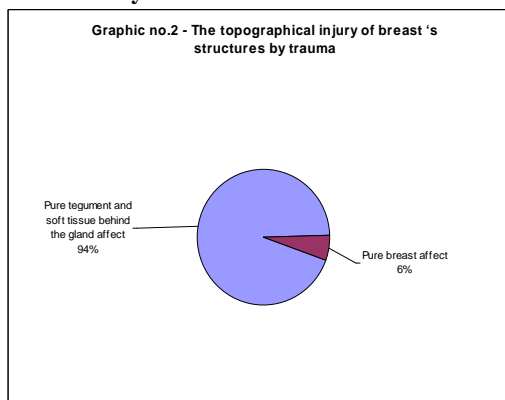
Breast trauma are extremely rare, the study brings the analysis on cases submitted to the Board effective guard, given that some of these cases is not presented at ER but go through the family doctor to consult surgery in ambulatory specialist, a part of the ER presented are not diagnosed, due to the dominant presence of other injuries, and due to a faulty training in recognising minor injuries.

In a study period of 50 months, of a total of 103.788 cases at ER, 30.358 were trauma (89,40% by domestic accidents, the remaining 10,60%-by accidents at work, or movement or physical aggression) of wich 1703 were chest injuries (69,35% by domestic accidents, 22,72% through physical aggression, 7,46% by road traffic accidents and 0,47% by accidents at work).Affecting the breast in question in the trauma of the chest wall above is 25% of thoracic trauma, our statistics include 83 breast lesions, representing 19,25% of preciosity chest wall above, but 78 cases revealed only superficial damage, of the skin, without the involvement of breast structures.

Picture no. 1. Prevalence of breast traumas in the total of chest injury

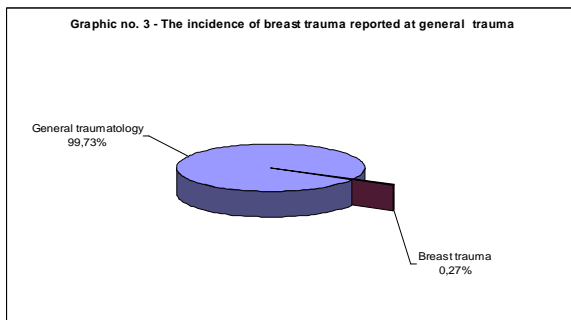


Picture no. 2. The topographical injury of breast's structures by trauma



CLINICAL ASPECTS

Picture no. 3. The incidence of breast trauma reported at general trauma



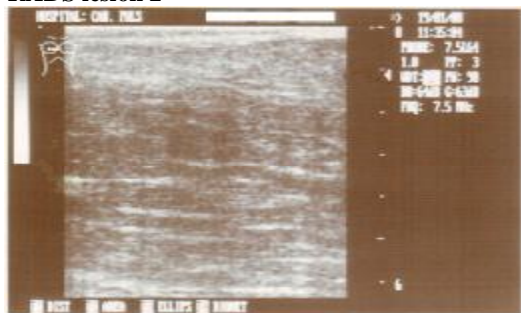
In our data-base, a single case required emergency admission, conduct surveillance and therapeutic surgical specialty hospital.

Aspects of ultrasound study are shown below:

Picture no. .4. a. Physical aggression-the breast, clinical aspect



Picture no. 4. b. Physically abused-the breast, ultrasound appearance, cross section; breast ACR-1, BI-RADS lesion 2



Picture no. 5. Left breast trauma by repeated sports injuries; ultrasound appearance, circular cross section; breast ACR-2, BI-RADS lesion 2



Picture no. 6. a. Left breast trauma by the crash-clinical aspect internment, before surgical treatment, at ER



Picture no. 6. b. Left breast trauma by the crash-post clinical aspect after surgical treatment



Picture no. 6. c. Left breast trauma by the crash-post clinical aspect after the extraction of drainage tube

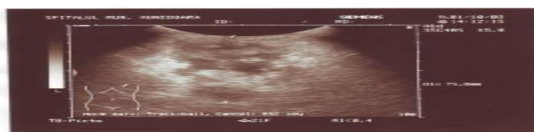
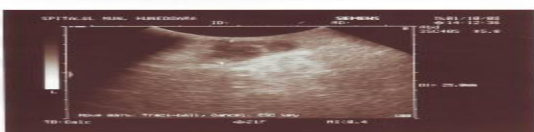


CLINICAL ASPECTS

Picture no. 7. a. Left breast trauma by the crash-part circular section ultrasound, breast ACR-1, BI-RADS lesion 2



Picture no. 7. b. Left breast trauma by a crash-part circular section ultrasound, breast ACR-1, BI-RADS lesion 2



CONCLUSIONS

- profile studies in literature are few;
- female sex is mostly affected by breast trauma;
- breast lesions are frequently superficial;
- breast traumatic impairment occurs frequently in the thoracic trauma, which may mask or minimize reaching breast;
- over 90% of breast lesions are closed trauma;
- most breast lesions are produced by physical aggression, road traffic accidents, sports accidents, and less by domestic accidents or work accidents;
- about 50% of breast trauma, does not appear to be consulted at ER or those are masked by other trauma; about 20% of them get to control outpatient speciality, the rest are lost in statistics;
- breast-damage is very rare in women but quite exceptional in men;
- over 75% of breast trauma, occurring in breast ACR 1;
- ultrasound imaging method is the first line in investigation of these injuries, but limited in depth of lesions in fat breast.

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