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A Cord Under the Skin: Mondor's Disease of the Breast and Chest Wall Detected Using Ultrasound

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Abstract

Mondor's disease is a rare, self-limiting superficial thrombophlebitis of the subcutaneous veins of the anterolateral chest wall and breast, presenting as a palpable, cord-like subcutaneous structure, most common in women but also in men. Ultrasound shows a characteristic superficial, non-compressible tubular structure without flow on Doppler, and the condition is managed conservatively. It usually follows trauma, surgery, or physical strain, but a proportion of cases have no identifiable cause, and an association with breast carcinoma has been reported. We report four patients, three women aged 43, 62, and 65 years and a man aged 51 years, who presented to a private breast ultrasound clinic in Greece over an eight-month period (January to August 2026) with a palpable, cord-like subcutaneous lesion on the left side (in the inframammary region or lower breast in the three women and on the lateral chest wall in the man). They were identified among 201 breast or axillary ultrasound examinations performed at the practice during the same period (2.0%). None reported trauma, surgery, or biopsy; possible minor triggers were limited to recent gym exercise in one patient and a recalled insect bite near the site in another. High-frequency ultrasound in each case showed a superficial, non-compressible tubular structure (with a beaded contour in one case) and absent flow on colour Doppler, consistent with a thrombosed superficial vein. All three women reported by telephone that mammography performed approximately two weeks later was normal; no laboratory investigations were performed. Conservative management was advised, consisting of reassurance, relative rest, avoidance of strenuous exercise, otherwise normal daily activity, and over-the-counter analgesia as needed, without anticoagulation, with follow-up ultrasound; all four patients were subsequently lost to follow-up for ultrasound. Mondor's disease of the breast can occur without a clear precipitating cause in middle-aged adults of either sex. Ultrasound with Doppler is a fast, non-invasive way to confirm the diagnosis and spare unnecessary intervention. Because of the reported link with breast cancer, age-appropriate breast imaging and clinical follow-up remain essential, even when the presentation is classic.

Categories: Radiology, Anatomy, Dermatology
Keywords: breast ultrasound, case series, doppler, male breast, mondor's disease, superficial thrombophlebitis, thoracoepigastric vein

Introduction

Mondor's disease is a superficial thrombophlebitis of the subcutaneous veins of the anterior chest wall and breast. Put simply, a clot forms in a vein just beneath the skin, and the inflamed vein hardens into a cord that can be felt. It was first described by Fagge in 1869 and characterised in detail by the French surgeon, Henri Mondor, in 1939 [1,2]. The veins most commonly involved are the thoracoepigastric vein, the lateral thoracic vein and the superior epigastric vein [3,4]. The same name is also used for a similar condition of the dorsal vein of the penis; this report concerns only the chest wall and breast form [3].

The condition typically presents as a palpable, tender or painless, cord-like subcutaneous band, often more visible when the arm is raised or the skin is stretched. It is typically self-limiting, resolving over four to eight weeks, and is managed conservatively with reassurance, simple analgesia and avoidance of aggravating factors, without routine anticoagulation [3-6]. It is uncommon; reported incidence in breast clinic populations is generally below 1%, and it is likely under-reported because it is benign and self-limiting [3]. It is diagnosed most often in women between 30 and 60 years of age, but it also occurs in men, in whom it is reported less frequently [3,7].

Recognised precipitating factors include breast surgery, core or vacuum biopsy, direct trauma, strenuous upper-limb exercise, tight-fitting garments, and hypercoagulable states [3,4,8]. An association with ipsilateral breast carcinoma has also been reported, and Mondor's disease may occasionally be its first presentation, which is why imaging work-up matters even when the clinical picture is typical [9,10]. Many cases, however, remain idiopathic [3,5]. In this report, 'idiopathic' means that no precipitating factor was identified on history and clinical examination.

Ultrasound with colour Doppler has become the first-line investigation, as it can confirm a thrombosed superficial vein, document its extent, and exclude an underlying mass in the same examination [11]. We

report four cases seen in a single private breast ultrasound practice over eight months. They are of interest because none followed surgery, biopsy or trauma; possible triggers were minor or uncertain, and one occurred in a man. We focus on their ultrasound appearance and clinical course.

Case Presentation

The four patients, three women and one man, were referred to, or self-presented at, a private breast ultrasound clinic in Athens, Greece, between January and August 2026. During this period, 201 breast or axillary ultrasound examinations were performed at the practice, giving a frequency of 4 in 201 (2.0%; 95% confidence interval (CI): 0.8%-5.0%, calculated using the Wilson score method [12]). No laboratory investigations (full blood count, inflammatory markers, coagulation profile, D-dimer or thrombophilia screen) were performed in any patient because all were systemically well, the presentations were clinically typical and the ultrasound findings were diagnostic. The relevant differential diagnoses were excluded on imaging. Each gave written informed consent for publication of anonymised clinical details and images. This case series is reported in accordance with the CARE guidelines [13]. This retrospective case series was deemed exempt from ethical approval by the practice's medical director.

Case 1

A 43-year-old premenopausal woman attended for a routine bilateral breast ultrasound. Immediately before the examination, she reported that over the preceding week she had noticed a 'tight, hard string' running beneath the lower aspect of her left breast, with a mild pulling sensation on arm movement. She denied a discrete lump, nipple discharge, skin change, fever or weight loss, and reported no trauma, recent breast surgery or biopsy, unusual physical exertion or new garments, but recalled an insect bite on the skin near the affected area shortly before the onset of symptoms; this could not be verified, and its relevance is uncertain. She had no previous breast disease, breast surgery or radiotherapy. Her medical history included mild asthma, with no history of venous thromboembolism, known thrombophilia or systemic inflammatory disease.

On inspection in the supine position with the left arm elevated, the breasts were symmetrical, and a subtle linear depression was visible along the inframammary region of the left breast, extending onto the anterior chest wall. Palpation revealed a thin, firm, slightly tender, mobile subcutaneous cord corresponding to this line, without a discrete intramammary mass. There was no erythema, skin thickening, nipple inversion or axillary lymphadenopathy.

Bilateral breast ultrasound showed normal, age-appropriate fibroglandular tissue with no focal suspicious lesion; targeted ultrasound of the symptomatic area showed a non-compressible superficial subcutaneous vein of approximately 2.0-2.5 mm calibre, traceable for at least 1.6 cm, with a beaded contour of alternating dilated and narrowed segments and no flow on colour Doppler (Figure *1*). In a telephone conversation with clinic staff approximately two weeks later, she reported that a mammogram had been performed and was normal; however, the report was not available for review. No laboratory investigations were performed. She was reassured and advised to use over-the-counter analgesia as needed, rest as needed, avoid strenuous exercise, and maintain otherwise normal daily activity, without anticoagulation. She was asked to return for follow-up ultrasound but did not attend.

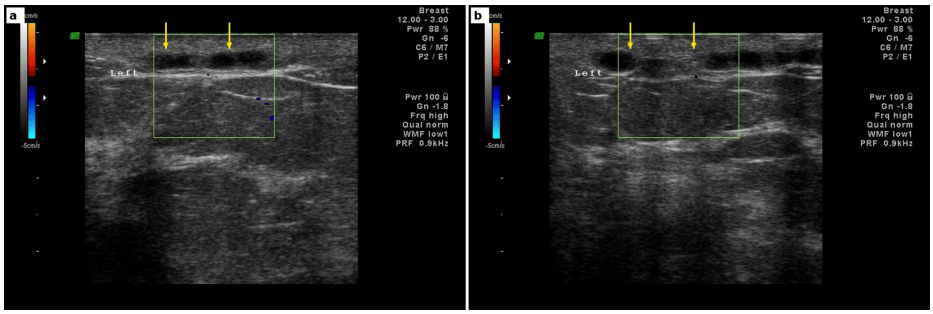


FIGURE 1: Case 1 (left breast, inframammary region). (a, b) Longitudinal views with the colour Doppler box placed over the palpable cord show a superficial subcutaneous vein with a beaded contour of alternating dilated, hypoechoic segments (arrows) and no flow signal.

Case 2

A 62-year-old woman with no relevant medical history presented with discomfort beneath the left breast of about one week's duration. Ultrasound with a high-frequency linear transducer showed a thin, superficial

tubular structure immediately beneath the skin in the left inframammary region, approximately 1.0-1.5 mm in calibre and traceable for at least 1.3 cm. It was non-compressible and showed no flow on colour Doppler, while flow was present in a deeper adjacent vessel within the same colour box, confirming adequate Doppler sensitivity (Figure 2). There was no solid mass or suspicious axillary lymph node; an incidental 3 mm simple cyst was noted in the upper outer quadrant of the left breast. No laboratory investigations were performed. She was advised conservative management (reassurance, relative rest and avoidance of strenuous exercise), without anticoagulation, together with mammography and follow-up ultrasound. Approximately two weeks later, she reported by telephone that mammography had been performed and was normal; she did not return for follow-up ultrasound.

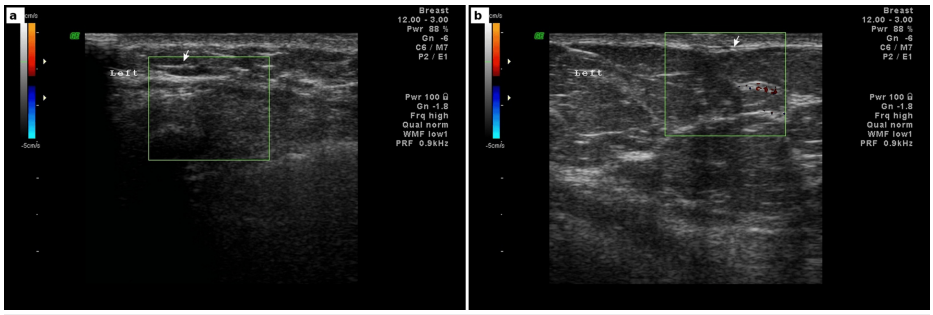


FIGURE 2: Case 2 (left breast, inframammary region). (a) A thin superficial tubular structure just beneath the skin (arrow), non-compressible, with no colour Doppler signal. (b) The same vessel (arrow) without flow, while colour signal is present in a deeper adjacent vessel within the box.

Case 3

A 51-year-old man presented with discomfort on the left lateral chest wall. He had exercised at the gym during the preceding week and had attributed the symptoms to muscle soreness. Ultrasound with a high-frequency linear transducer showed a thin, superficial thrombosed vein running parallel to the skin over the left lateral chest wall, approximately 0.5-1.0 mm in calibre and traceable for at least 1.7 cm. The vessel was non-compressible and showed no flow on colour Doppler (Figure 3), and there was no underlying mass. Mammography and laboratory investigations were not performed. He was advised conservative management, including avoidance of strenuous exercise, without anticoagulation, and follow-up ultrasound, but did not return.

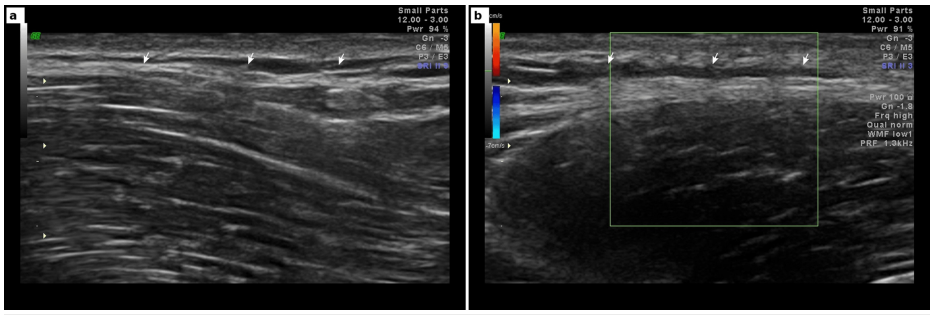


FIGURE 3: Case 3 (51-year-old man, left side). (a) Longitudinal greyscale image showing a thin, superficial thrombosed vein running parallel to the skin (arrows). (b) Colour Doppler over the same segment (arrows) shows no flow.

Case 4

A 65-year-old woman was referred by her general practitioner with a two-week history of discomfort and mild pain beneath the left inframammary fold. Ultrasound with high-frequency linear transducers showed a thin, thrombosed subcutaneous vein in the lower part of the left breast, between the four and seven o'clock positions and outside the glandular tissue, measuring approximately 1.2 × 1.6 mm in cross-section and traceable for at least 1.0 cm. On transverse imaging, the vessel was round and non-compressible. Colour

Doppler showed no flow within it, while flow was preserved in adjacent subcutaneous vessels, and pulsed-wave Doppler with the sample volume in the lumen showed no venous signal (Figure 4). As an incidental finding, fine scattered calcifications were noted in the right breast. No laboratory investigations were performed. The patient was advised conservative management, without anticoagulation, together with mammography and follow-up ultrasound. She subsequently underwent mammography and reported by telephone that it was normal; she did not return for follow-up ultrasound. The clinical and sonographic characteristics of the four cases are summarised in Table 1.

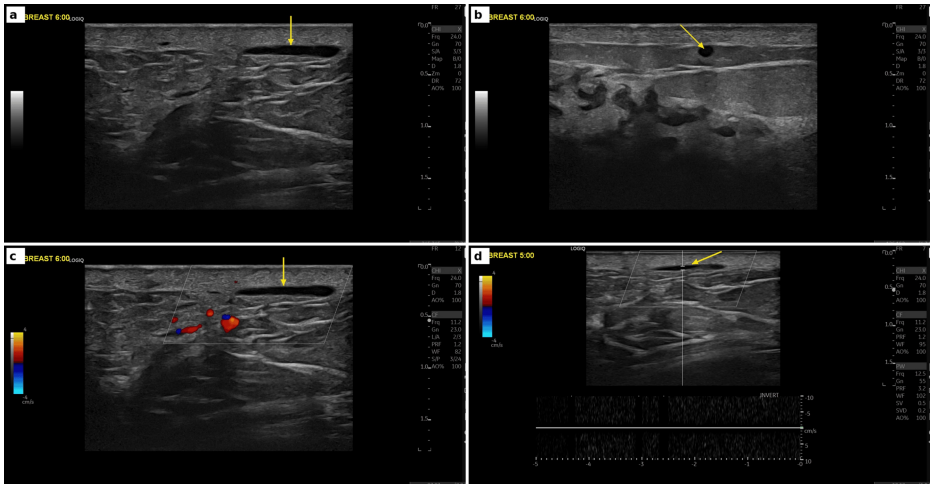


FIGURE 4: Case 4 (left breast, five-six o'clock), imaged with a high-frequency L6-24 transducer. (a) Longitudinal view of a distended, anechoic to hypoechoic subcutaneous vein (arrow). (b) Transverse view showing the round, non-compressible vessel (arrow). (c) Colour Doppler: no flow within the thrombosed vein (arrow), while flow is preserved in adjacent subcutaneous vessels. (d) Pulsed-wave Doppler with the sample volume in the lumen (arrow) shows no venous signal.

	Case 1	Case 2	Case 3	Case 4
Age (years)/sex	43/F	62/F	51/M	65/F
Month of examination (2026)	January	February	May	August
Side/location	Left, inframammary	Left, inframammary	Left lateral chest wall	Left, lower breast (four-seven o'clock), subcutaneous
Ultrasound system	Voluson 730 Expert	Voluson 730 Expert	Voluson 730 Expert	LOGIQ Fortis
Symptom duration before scan (days)	Seven	~Seven	Not recorded	14
Pain	Mild (pulling, slightly tender)	Discomfort	Discomfort (attributed to gym soreness)	Mild pain and discomfort
Precipitating factor	None definite (patient-reported insect bite nearby)	None identified	Possible: gym exercise in preceding week	None identified
Thrombosed segment visualised on US (cm)	≥1.6 (visualised)	≥1.3 (visualised)	≥1.7 (visualised)	≥1.0 (visualised)
Vessel calibre, approx. (mm)	≈2.0-2.5 (beaded)	≈1.0-1.5	≈0.5-1.0	≈1.2 × 1.6
Doppler flow	Absent	Absent	Absent	Absent
Mammography	Patient-reported normal (~two weeks later)	Patient-reported normal (~two weeks later)	Not performed	Patient-reported normal
Treatment	Conservative; OTC analgesia; no anticoagulation	Conservative; no anticoagulation	Conservative; no anticoagulation	Conservative; no anticoagulation
Time to resolution (weeks)	Unknown	Unknown	Unknown	Unknown

TABLE 1: Summary of the four cases

Imaging technique and findings

All examinations were performed by the first author using a Voluson 730 Expert ultrasound system (GE HealthCare; Chicago, IL, USA) with an SP 6-12 high-frequency linear transducer (GE HealthCare) (Cases 1-3), or a LOGIQ Fortis ultrasound system (GE HealthCare) with ML6-15 and L6-24 high-frequency linear transducers (GE HealthCare) (Case 4), with greyscale, colour and power Doppler imaging. Doppler settings were optimised for slow venous flow (colour pulse repetition frequency 0.9-1.3 kHz, velocity scale ±4-7 cm/s, low wall filter), and, in Case 4, pulsed-wave Doppler was added, with the sample volume placed within the vessel lumen. Vessel calibre and the visualised length of the thrombosed segment were measured retrospectively on the stored images using the on-screen depth scale. The palpable cord was scanned along its length in longitudinal and transverse planes, and compression was applied to assess collapsibility.

In all four cases, ultrasound showed a superficial, subcutaneous tubular structure corresponding to the palpable cord, measuring approximately 0.5-2.5 mm in calibre and traceable over at least 1.0-1.7 cm within the field of view. The lumen was anechoic to hypoechoic, and the vessel was non-compressible. In Case 1, it showed a beaded appearance with alternating dilated and narrowed segments (Figure *1*). Colour Doppler showed absent flow within the affected segment (Figures *1*-*4*). In Cases 2 and 4, flow was preserved in adjacent vessels within the same colour box, confirming adequate Doppler sensitivity. In Case 4, pulsed-wave Doppler of the sample volume in the lumen showed no venous signal (Figure *4*). No solid mass, architectural distortion or suspicious axillary nodes were identified in either breast.

Follow-up ultrasound is not available, as all four patients were lost to follow-up despite being advised to return.

Discussion

These four cases show that Mondor's disease of the breast can present without a clear trigger in otherwise well adults aged 43 to 65 years, including one man, and that ultrasound with Doppler establishes the diagnosis at the first visit.

Pathophysiology and aetiology

The underlying lesion is thrombosis of a superficial vein with surrounding inflammation, followed by fibrosis and, in most cases, recanalisation over several weeks [3]. Proposed mechanisms follow Virchow's triad: local endothelial injury (surgery, biopsy, trauma, compression), venous stasis (tight garments, repetitive arm movement) and hypercoagulability (inherited thrombophilia, antiphospholipid antibodies, hormonal therapy, malignancy) [3,4]. Published series describe a substantial idiopathic fraction [3-5], which is consistent with our experience. Local infection and inflammation have also been described as triggers [3]. In Case 1, the patient recalled an insect bite close to the affected area; a local inflammatory reaction could plausibly have contributed, but the account could not be verified, and we regard the association as speculative. In Case 3, the patient had exercised at the gym in the preceding week; strenuous upper-limb activity is a recognised trigger and may have contributed [3,4,8].

Imaging features

The sonographic appearance in our patients matches previously described findings: a superficial tubular structure, often with a beaded or 'string of beads' contour, non-compressible, with intraluminal echoes and no flow on colour Doppler [11]. Mammography is usually normal or shows a superficial tubular or beaded density [11]. Ultrasound has the practical advantage of directly correlating the palpable abnormality with the imaging finding, documenting the absence of flow, and surveying the breast for an underlying mass in the same sitting. Follow-up scanning typically shows recanalisation within 4-8 weeks [3,11].

Comparison with the literature

Our findings are consistent with published reports of Mondor's disease of the breast and anterior chest wall. The thoracoepigastric vein, which runs from the lower outer breast towards the abdominal wall, is the vessel most often involved, followed by the lateral thoracic and superior epigastric veins [3,4]. The inframammary and lower-breast location in our three women is consistent with thoracoepigastric involvement, whereas the lateral chest-wall cord in our male patient corresponds most closely to the territory of the lateral thoracic vein. Published cases occur predominantly in women aged 30-60 years, with men less often affected [3], in keeping with our age range of 43-65 years and one male patient. Recent series support this picture. In a single-centre study of 20 patients, more than half had no plausible predisposing factor and about three-quarters of lesions resolved spontaneously within four weeks [5]. In a longitudinal study of 45 patients, surgery was the likely cause in about half of thoracic cases, and no new cancer was diagnosed during long-term follow-up [7]. The sonographic appearance described by Shetty and Watson, a superficial, non-compressible and often beaded tubular structure without flow [11], was reproduced in all four of our cases; by contrast, ultrasound demonstrated the thrombosed vein in only one of three patients in a recent case series [6], underlining the value of a targeted high-frequency examination with Doppler. The course is typically self-limiting, with resolution over four to eight weeks under conservative management [3-6]; however, we could not confirm this in our patients due to loss to follow-up. Finally, published series report an association with breast carcinoma in a minority of patients [9,10]; none of our patients had a mass on ultrasound, and all three women reported normal mammography.

Association with breast cancer

The most important clinical point is that Mondor's disease, although benign, has been reported in association with ipsilateral breast carcinoma in a minority of patients [9], and it may occasionally be the first manifestation of the cancer, as in a recent report of a 30-year-old woman in whom breast ultrasound revealed an underlying invasive carcinoma [10]. In a longitudinal series, one in five patients had known cancer at the time of diagnosis, although no new cancers emerged during follow-up [7]. For this reason, most authors recommend age-appropriate breast imaging, and mammography in women over 40, even when the presentation is typical [3,9,10]. In our series, ultrasound showed no associated mass, and all three women reported by telephone that mammography performed approximately two weeks later was normal, although the reports were not available for review. The male patient did not undergo mammography. We would add that a normal initial scan does not remove the need for clinical review if the cord does not resolve within the expected time frame.

Mondor's disease in the male breast

Thoracic Mondor's disease is reported less often in men than in women [3,7]. In men, the differential diagnosis of a palpable breast lesion includes gynaecomastia, lipoma, epidermal inclusion cyst and male breast carcinoma, which, although uncommon, often presents at a later stage. Exercise-induced Mondor's disease of the chest wall has been described in a man after intense thoracoabdominal training, with a non-compressible thrombosed vein without Doppler flow and complete resolution within two weeks [8], closely

resembling our Case 3. The same sonographic criteria were applied in our male patient as in the three women, and the diagnosis was made at the first examination. Apart from gym exercise in the preceding week, no other predisposing factors were reported.

Differential diagnosis

A cord-like palpable lesion may also represent a dilated duct, a fibrotic band after previous surgery, a lymphatic cord, or, rarely, a vascular or infiltrative malignancy [3,11]. The combination of a superficial subcutaneous course, venous continuity, non-compressibility and absent Doppler flow distinguishes Mondor's disease from these entities. Axillary web syndrome, a cord-like band in the axilla that typically follows axillary lymph node dissection for breast cancer, shares clinical features with Mondor's disease, and the two can overlap after breast cancer surgery [14,15]; it should be considered when the cord lies near the axilla, particularly after axillary surgery. The main differential diagnoses and the features that excluded them in our patients are summarised in Table *2*.

Condition	Typical ultrasound features	Findings in our cases
Mondor's disease (superficial thrombophlebitis)	Superficial, non-compressible tubular structure along the palpable cord; anechoic to hypoechoic lumen, sometimes beaded; no flow on Doppler [3,11]	Present in all four cases
Patent superficial vein or varix	Compressible vessel with flow on colour Doppler[3,11]	Excluded: vessels non-compressible, with no flow
Ductal ectasia	Fluid-filled duct, usually subareolar and continuous with the nipple [3,11]	Excluded: peripheral subcutaneous location, no connection to the nipple
Post-surgical fibrotic band or scar	Echogenic linear band without a lumen, at a previous operative site [3,11]	Excluded: anechoic or hypoechoic lumen; no previous surgery at the site in any case
Axillary web syndrome (lymphatic cord)	Thin cord in the axilla, typically after axillary surgery; usually no venous lumen [14,15]	Considered in Case 3 (lateral chest wall); excluded by a tubular venous structure without flow
Breast carcinoma or infiltrative lesion	Irregular mass, architectural distortion or skin thickening[3,11]	Excluded: no mass or distortion on ultrasound; mammography reported normal in all three women
Gynaecomastia (men)	Subareolar fibroglandular tissue [3,11]	Not applicable: lateral chest-wall location in Case 3, with a tubular venous structure

TABLE 2: Differential diagnosis of a palpable cord-like lesion of the breast or chest wall and its exclusion in the present cases

Management

There are no dedicated European, UK or US guidelines for Mondor's disease of the breast. Guidance on superficial vein thrombosis from the European Society for Vascular Surgery, the British Society for Haematology, and the American College of Chest Physicians [16-18] primarily addresses the lower limb, where anticoagulation is reserved for extensive thrombosis or thrombosis close to the deep venous system. Mondor's disease of the chest wall is self-limiting and carries no comparable risk of deep vein involvement, and published reports consistently favour conservative management: reassurance, avoidance of strenuous activity and compressive garments, warm compresses and simple analgesia if needed, without routine anticoagulation [3-6]. Our recommendation followed this approach. All four patients were advised to follow relative rest, avoid strenuous exercise, and maintain an otherwise normal daily routine, with over-the-counter analgesia as needed in Case 1; none received anticoagulants. Further haematological work-up may be considered in recurrent, bilateral or extensive cases, or where there is a personal or family history of thrombosis.

Strengths and limitations

The strengths of this report are consistent imaging by a single operator and detailed sonographic documentation of a rare entity at first presentation. Its limitations are the small number of cases, the retrospective design, the absence of any laboratory work-up, including D-dimer and thrombophilia screening, the absence of mammography in the male patient, mammography results in the women that were reported by the patients and not reviewed by the authors, and the lack of follow-up. All examinations were performed by the first author under the supervision of the third author. Follow-up ultrasound was

recommended to all four patients, but none returned. This reflects a real constraint of private outpatient practice in Greece: patients move freely between private centres and public hospitals, and later investigations are often performed elsewhere without the original examiner being informed. These limitations do not diminish the central observation. A frequency of 2.0% (4 of 201 breast or axillary ultrasound examinations over eight months; 95% CI 0.8%-5.0%) is higher than the figure of under 1% generally reported for breast clinic populations [3], although with only four cases the estimate is imprecise. It is also notable that none of the four cases followed surgery, biopsy or trauma, with only minor or uncertain possible triggers (recent gym exercise in one patient and a patient-reported insect bite in another), and that one occurred in a man, whereas a large share of published cases follow surgery, biopsy or trauma [3,4,7]. It does not by itself establish a change in incidence, but it suggests that Mondor's disease is under-recognised, that idiopathic presentations are not exceptional, and that those performing breast ultrasound should be ready to make the diagnosis confidently at the first visit.

Conclusions

Mondor's disease can occur without a clear trigger, and in men as well as women. Our four cases, one of them in a man, suggest that the idiopathic form may be under-recognised and should be considered in any patient with a palpable cord-like lesion of the breast. High-frequency ultrasound with Doppler confirms the diagnosis quickly and non-invasively, allowing the clinician to avoid unnecessary biopsy. Because of its reported association with breast carcinoma, age-appropriate breast imaging and follow-up until resolution remain essential.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Andreas I. Biris, Despoina Biri

Acquisition, analysis, or interpretation of data: Andreas I. Biris, Ioannis A. Biris

Drafting of the manuscript: Andreas I. Biris

Critical review of the manuscript for important intellectual content: Andreas I. Biris, Ioannis A. Biris, Despoina Biri

Supervision: Andreas I. Biris, Ioannis A. Biris

Disclosures

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