REYNARD'S PHENOMENON

ENGLISH

Viktors Linovs, MD; Maija Radzina, MD, PhD; Dr. Natalija Ezite
Paula Stradina Clinical University Hospital
Diagnostic Radiology Institute. Riga, Latvia

Case History
A 36-year-old, otherwise healthy woman presented with a complaint of “darker skin color” changes over the right foot toe joints (Fig. 1). These joints had become painful with no apparent reason over 4 weeks. The patient also gave a history of cold hands occasionally. The general physician referred the patient for further investigation, and a Duplex ultrasound examination of the leg arteries was performed.

The ultrasound examination of the right leg calf arteries, demonstrated no evidence of atherosclerosis (Figs.2 and 3). The right dorsal artery (dorsalis pedis) of the foot could not be visualized using B mode image, color Doppler showed only poor arterial signal and spectral Doppler analysis showed a reduced monophasic pattern of blood flow, with an estimated velocity of 13 cm/sec.

With these findings, a decision was made to increase the temperature of the room by using the air-conditioning system, and to re-examine the patients to ascertain the if there were any subsequent changes in the spectrum of the flow in dorsal artery of the foot. After 12 minutes the spectral flow analysis was again performed. The artery could now be seen easily using B mode, color Doppler showed good signal at the site of the artery, and the spectral analysis showed a normal triphasic waveform pattern of 30 cm/sec (Fig. 4 and 5).

Conclusion: Unilateral right foot Reynaud phenomenon

Raynaud’s Phenomenon
Raynaud’s phenomenon (RP) manifests as recurrent vasospasm of the fingers and toes and usually occurs in response to stress or cold exposure. The phenomenon is named after Maurice Raynaud, who, as a medical student, defined the first case in 1862 as “episodic, symmetric, vasospasm characterized by pallor, cyanosis, suffusion, and a sense of fullness or tautness, which may be painful” (1). Raynaud’s phenomenon occurs more commonly in colder climates. Primary Raynaud phenomenon usually occurs between the ages of 12 and 25 years. It is more likely to affect women than men (4:1). Five to 15% of patients with primary Raynaud’s phenomenon develop a secondary cause later in the course of the disease (mostly a connective tissue disorder). Secondary Raynaud phenomenon tends to begin after the age of 35-40 years.

FENOMENO DI RAYNAUD

ITALIAN

Viktors Linovs, MD; Maija Radzina, MD, PhD; Dr. Natalija Ezite
Paula Stradina Clinical University Hospital
Diagnostic Radiology Institute. Riga, Latvia

Storia del caso
Una donna di 36 anni sana lamenta un “colore più scuro della pelle” sopra le articolazioni del I raggio del piede di destra (fig. 1). Queste articolazioni erano diventate dolorose senza alcun motivo apparente per 4 settimane. Il paziente ha anche riferito una storia di “mani fredde” di tanto in tanto. Il medico di medicina generale ha chiesto per la paziente ulteriori indagini, ed è stato eseguito un esame ecografico duplex delle arterie delle gambe.

L’esame ecografico delle arterie del polpaccio della gamba di destra non ha dimostrato alcuna evidenza di aterosclerosi (Figg.2 e 3). L’arteria dorsale destra (dorsale pedis) del piede non poteva essere visualizzata in B-Mode, il color Doppler invece ha mostrato solo poveri segnali arteriosi; l’analisi Doppler spettrale ha mostrato un andamento monofasico con riduzione del flusso sanguigno ed una velocità stimata di 13 cm / sec.

A seguito di questi risultati, si è deciso di aumentare la temperatura della stanza utilizzando il sistema di condizionamento dell’aria e di riesaminare i pazienti per accertare se ci fossero eventuali modifiche dello spettro del flusso nelle arterie dorsali del piede. Dopo 12 minuti l’analisi del flusso spettrale è stato nuovamente eseguito. L’arteria poteva ora essere vista facilmente utilizzando la modalità B, il Color Doppler mostrava buon segnale nell’arteria e l’analisi spettrale ha mostrato una normale onda trifasica di 30 cm / sec (Fig. 4 e 5)

Conclusion: fenomeno Raynaud unilaterale piede destro

Fenomeno di Raynaud
Il fenomeno di Raynaud (RP) si manifesta come vasospasmo ricorrente delle mani e dei piedi e di solito si verifica in risposta ad uno stress o all’esposizione al freddo. Il fenomeno prende il nome di Maurice Raynaud, che, come studente di medicina, ha definito il primo caso nel 1862 come un “vasospasmo episodico, simmetrico, caratterizzato da pallor, cianosi, edema e un senso di pienezza, che può essere doloroso” (1). Il fenomeno di Raynaud si verifica più comunemente nei climi più freddi. Il fenomeno di Raynaud primario si verifica di solito tra i 12 e 25 anni. Ha un’incidenza superiore nelle donne rispetto agli uomini (4:1). Il 5 - 15% dei pazienti con fenomeno di Raynaud primario sviluppa una causa secondaria più avanti nel corso della malattia (principalmente una malattia del tessuto connettivo). Il fenomeno di Raynaud secondario tende ad insorgere dopo l’età di 35-40 anni.
Secondary RP occurs in more than 90% of patients with scleroderma and in approximately 30% of patients with systemic lupus erythematosus or Sjögren’s syndrome (2).

The pathogenesis of RP remains elusive. It is likely that multiple mechanisms contribute, and that their presence and contribution varies depending on whether RP is primary or secondary and, if secondary, then to the underlying cause. Nonetheless there are some unifying principles. As a broad generalization RP results when the balance between vasodilation and vasoconstriction is disturbed in favor of vasoconstriction. However, it is worth highlighting that even in healthy control subjects, mechanisms for controlling skin temperature and blood flow are extremely complicated and incompletely understood (3,4).

Although the diagnosis of RP is based on the history, physical examination, and investigation of RP is in large part guided by the proposed (and generally accepted) criteria for Primary RP (5), which does not include Duplex ultrasound as the primary examination. There are studies that report good specificity and sensitivity of the ultrasound method for distinguishing primary and secondary forms of this phenomena (6,7). Treatment of RP differs among patients and depends on severity. Primary RP often responds to general (non-drug) measures alone and may even improve spontaneously. In contrast, the patient with systemic sclerosis and severe digital ulceration and/or critical ischemia may require hospitalization for intravenous prostanoid therapy and possibly surgery (8).

Discussion
The patient is of typical age for a secondary Raynaud phenomenon, she is a woman that lives in a cold climate. The symptoms are unilateral and mostly concern lower extremities, which are not specific for the phenomenon, and external vascular compression or atherosclerosis had to be ruled out. Dynamic Doppler evaluation should be performed to distinguish between primary and secondary Raynaud’s phenomena.
References:

Figure Legends:

Fig.1: Right foot color changes on II, III and IV toes.

Fig.2: Normal triphasic spectral Doppler waveform in the tibialis posterior artery.

Fig.3: Normal triphasic spectral Doppler waveform in the normal tibialis anterior artery.

Fig.4: First examination of the dorsalis pedis artery showed reduced monophasic flow, artery is barely visualized using B mode, it has weak color Doppler signal.

Fig.5: After increasing the temperature in the examination room for 12 minutes normal triphasic flow in the dorsalis pedis artery is observed. The artery is clearly visualised in B mode, it has normal color Doppler signal.
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Fig. 1

Fig. 2

Fig. 3

Fig. 4

Fig. 5

FENOMENO DI RAYNAUD