



ORIGINAL ARTICLE

Diagnostic validity of hand gestures in chest pain of coronary origin[☆]



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KEYWORDS

Emergency medicine;
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Abstract

Objectives: To determine the frequency of 3 hand gestures by patients with chest pain and determine the diagnostic validity of the gestures in acute coronary syndrome.

Patients and methods: A prospective study was conducted on 383 adult patients treated for chest pain in an emergency department. We observed certain hand gestures, previously referred to in the medical literature as characteristic of coronary pain (gesture 1: a clenched fist held over the sternal area or Levine's sign; gesture 2: open hand located over the same area; gesture 3: both hands placed in the center of the chest), as well as other gestures. We analyzed their association with the coronary origin of the pain.

Results: We confirmed the coronary origin of the pain in 164 (43%) patients (ACS group). The other 219 patients (57%) did not have a coronary origin for the pain (nonACS group). Eighty-nine percent of the patients identified their pain with one of the 3 classical gestures. The most frequent gesture was number 2, both overall (59%) and by group (60% ACS group; 57.5% nonACS group). There was no significant association between the type of gesture and the final diagnosis ($p = .172$). The greater specificity corresponded to Levine's sign (90%), followed by other gestures (86%) and gesture 3 (81%).

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Conclusions: Although 89% of the patients expressed their chest pain with one of the 3 manual gestures classically associated with coronary pain, none achieved sufficient diagnostic accuracy to be used as indicative of this type of pain.

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PALABRAS CLAVE

Medicina de urgencias;
Dolor torácico;
Gestos;
Síndrome coronario agudo

Validez diagnóstica del lenguaje de las manos en el dolor torácico de origen coronario

Resumen

Objetivos: Comprobar la frecuencia de 3 gestos realizados con las manos por los pacientes con dolor torácico y determinar su validez diagnóstica en el síndrome coronario agudo.

Pacientes y métodos: Estudio prospectivo de 383 pacientes adultos asistidos en un servicio de urgencias por dolor torácico. Se observó la realización de determinados signos gestuales con las manos, previamente referidos en la literatura médica como característicos de dolor coronario (gesto 1: mano en puño dispuesta sobre zona esternal o signo de Levine; gesto 2: mano abierta situada en la misma localización; gesto 3: ambas manos colocadas en el centro del tórax), así como la de otros gestos. Se analizó su asociación con el origen coronario del dolor.

Resultados: En 164 (43%) pacientes se confirmó el origen coronario del dolor (grupo SCA), y en 219 (57%) no se confirmó (grupo no SCA). Un 89% de pacientes identificaron su dolor con alguno de los 3 gestos clásicos. El más frecuente fue el 2, tanto globalmente (59%) como por grupos (60% grupo SCA; 57,5% grupo no SCA). No hubo asociación significativa entre el tipo de gesto realizado y el diagnóstico final ($p=0,172$). La mayor especificidad correspondió al signo de Levine (90%), seguida de otros gestos (86%) y del gesto 3 (81%).

Conclusiones: Aunque el 89% de los pacientes expresaron el dolor torácico con alguno de los 3 gestos manuales clásicamente asociados al dolor coronario, ninguno de ellos alcanzó suficiente precisión diagnóstica para ser utilizado como indicativo de este tipo de dolor.

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Background

When faced with acute chest pain (ACP), the emergency physician must discern whether its origin is banal or caused by life-threatening disorders such as acute coronary syndrome (ACS).

ACP is a common symptom for consultation and represents 5–15% of all emergency room care.^{1,2} In Spain,^{1,3,4} 26–46% of ACP cases are initially considered an ACS but are subsequently discharged without confirming this diagnosis. Nevertheless, 2–10% of patients who are sent home with the diagnosis of noncoronary ACP have an ACS, with a poorer prognosis than those who are correctly identified and hospitalized.

The pillars for evaluating patients with ACP are the medical history, physical examination, electrocardiogram and cardiac markers. Various clinical protocols, decision algorithms and scoring scales^{5–10} have subsequently attempted to improve the effectiveness and efficiency of the diagnosis of ACP but have not been validated to discern whether the origin of the ACP is coronary or not.

When patients with ACP are asked questions such as “Where is the pain?” and “How does it feel?”, many use hand movements to locate the pain and communicate its quality,^{11,12} graphically illustrating their symptoms.

Therefore, important treaties on cardiology^{13–17} have referred to Levine’s sign and others as suggestive or even pathognomonic of the coronary origin of ACP. A closed fist over the sternum (Levine’s sign,¹³ Fig. 1A) communicates a piercing quality for the pain. An extended hand describes the feeling of heaviness on the chest (Fig. 1B). A feeling of a constrictive band around the chest can be represented by the lateral movement of the palms of both hands from the center of the chest (Fig. 1C). Patients with pain of non-coronary origin could use other positions or movements to illustrate their pain, such as fingers above and below the sternum (esophageal pain) or an index finger (pain in the chest wall).¹⁸

There are scarce studies in the literature that have analyzed the validity of these signs in diagnosing ACS, and their results are not very conclusive, despite conducting the studies with patients previously selected from coronary units.^{11,12}

Therefore, this study analyzed the frequency and diagnostic validity of these gestures in a cohort of patients who visited the hospital emergency department (HED) for ACP. The initial hypothesis was the language of hand gestures has diagnostic validity for identifying coronary ACP and distinguishing it from the noncoronary variety.

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