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Original article

Predictive Factors for Mortality in Fournier's Gangrene: A Series of 59 Cases☆,☆☆

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ABSTRACT

Aims: Fournier's gangrene (FG) is the necrotizing fasciitis of the perineum and genital area and presents a high mortality rate. The aim was to assess prognostic factors for mortality, create a new mortality predictive scale and compare it with previously published scales in patients diagnosed with FG in our Emergency Department.

Methods: Retrospective analysis study between 1998 and 2012.

Results: Of the 59 patients, 44 survived (74%) (S) and 15 died (26%) (D). Significant differences were found in peripheral vasculopathy (S 5 [11%]; D 6 [40%]; $P = .023$), haemoglobin (S 13; D 11; $P = .014$), haematocrit (S 37; D 31.4; $P = .009$), white blood cells (S 17,400; D 23,800; $P = .023$), serum urea (S 58; D 102; $P = .001$), creatinine (S 1.1; D 1.9; $P = .032$), potassium (S 3.7; D 4.4; $P = .012$) and alkaline phosphatase (S 92; D 133; $P = .014$). Predictive scores were: Charlson index (S 1; D 4; $P = .013$), severe sepsis criteria (S 16 [36%]; D 13 [86%]; $P = .001$), Fournier's Gangrene Severity Index Score (FGSIS) (S 4; D 7; $P = .002$) and Uludag Fournier's Gangrene Severity Index (UFGSI) (S 9; D 13; $P = .004$). Independent predictive factors were peripheral vasculopathy, serum potassium and severe sepsis criteria, and a model was created with an area under the ROC curve of 0.850 (0.760–0.973), higher than FGSIS (0.746 [0.601–0.981]) and UFGSI (0.760 [0.617–0.904]).

Conclusions: FG showed a high mortality rate. Independent predictive factors were peripheral vasculopathy, potassium and severe sepsis criteria creating a predictive model that performed better than those previously described.

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Factores predictivos de mortalidad en la gangrena de Fournier: serie de 59 casos

Palabras clave:
Fascitis necrosante
Gangrena de Fournier
Factores predictores
Mortalidad

RESUMEN

Objetivos: La gangrena de Fournier (GF) es la fascitis necrosante del periné y área genital que presenta una elevada mortalidad. El objetivo es analizar los factores pronósticos de mortalidad, creación de una nueva escala predictiva de mortalidad y compararla con las ya validadas en los pacientes diagnosticados de GF en nuestro Servicio de Urgencias.

Métodos: Estudio analítico, retrospectivo entre 1998 y 2012.

Resultados: De los 59 casos, 44 sobrevivieron (74%) (S) y 15 fallecieron (26%) (E). Se encontraron diferencias significativas en la vasculopatía periférica (S 5 [11%]; E 6 [40%]; p = 0,023), haemoglobin (S 13; E 11; p = 0,014), haematocrito (S 37; E 31,4; p = 0,009), leucocitos (S 17.400; E 23.800; p = 0,023), urea (S 58; E 102; p < 0,001), creatinina (S 1,1; E 1,9; p = 0,032), potasio (S 3,7; E 4,4; p = 0,012) y fosfatasa alcalina (S 92; E 133; p = 0,014). Escalas predictivas: índice de Charlson (S 1; E 4; p = 0,013), criterios de sepsis grave (S 16 [36%]; E 13 [86%]; p = 0,001), Fournier's gangrene severity index score (FGSIS) (S 4; E 7; p = 0,002) y Uludag Fournier's Gangrene Severity Index (UFGSI) (S 9; E 13; p = 0,004). Los factores predictores independientes fueron la vasculopatía periférica, el potasio sérico y criterios de sepsis grave, creando un modelo con área bajo la curva de 0,850 (0,760-0,973) superior al FGSIS (0,746 [0,601-0,981]) y al UFGSI (0,760 [0,617-0,904]).

Conclusiones: La GF presentó una tasa de mortalidad elevada cuyos factores predictores independientes fueron la vasculopatía periférica, el potasio sérico y criterios de sepsis grave, creando un modelo con una capacidad discriminativa superior al resto.

Introduction

Fournier's gangrene (FG) is the polymicrobial necrotizing fasciitis of the perineum and genital area, which may be of colorectal, genitourinary, traumatic or idiopathic aetiology. It primarily affects males in their 50s to 70s who, in most cases, have predisposing factors. It requires a multidisciplinary treatment, including haemodynamic support in the intensive care unit (ICU), broad-spectrum antibiotic therapy and surgical debridement; occasionally, a colostomy, suprapubic cystostomy or orchiectomy is required. It has an elevated mortality rate (7%–75%); the validated predictive scales are complex and they can potentially be improved, since they are partially composed of variables that have not shown significant differences, thus reducing their predictive capacity.[1–4]

The objective of this study is to analyse the prognostic factors of mortality, to create a new mortality predictive scale and to compare it to the already validated scales in a series of patients diagnosed with FG at our Emergency Department.

Methods

An observational, 15-year retrospective (1998–2012) cohort study was conducted at the Emergency Department of Hospital General Universitario Gregorio Marañón [Gregorio Marañón University General Hospital]. All patients clinically diagnosed with FG at the Emergency Department were included and the diagnosis was confirmed by a radiological test when applicable. Patients with an incomplete medical record were excluded. The independent variables collected were age, sex, associated comorbidities, Charlson comorbidity index (CCI) and age-adjusted Charlson comorbidity index (AACCI),[5] aetiology, vital signs (temperature, blood pressure, heart rate and respiratory rate), symptomatology, lab tests (the serum potassium values provided by our laboratory were considered normal in the range of 3.5–4.5 mmol/L), systemic inflammatory response syndrome (SIRS) (defined as compliance with two or more of the following criteria: heart rate >90 bpm, respiratory rate >20 bpm or $PaCO_2$ <32 mmHg, temperature >38 °C or <36 °C, WBCs >12,000/mm^3, <4000/mm^3 or >10% of immature forms), severe sepsis (defined as sepsis [SIRS in addition to a clinically or microbiologically documented infection] associated with organ dysfunction, hypotension or tissue hypoperfusion). Organic dysfunction variables were: renal [creatinine >2 mg/dL, >0.5 mg/dL increase, or diuresis <0.5 mL/kg/h for at least 2 h], pulmonary [arterial hypoxaemia with PaO_2/FIO_2 <300], liver [platelets <100 000/mm^3, total bilirubin >2 mg/dL, INR >1.5 or activated partial thromboplastin time >60 s]. Arterial hypotension variables were: systolic blood pressure <90 mmHg, mean blood pressure <70 mmHg or decreased systolic blood pressure >40 mmHg with respect to its baseline value. Tissue hypoperfusion variables were: lactate >3 mmol/L),[6] stay at the ICU and use of vasoactive drugs, antibiotic used, affected body surface (ABS) measured in the normogram used in burned patients according to which penis (1%), each scrotum (1%), perineum (1%) and each ischiorectal fossa (2.5%),[3,4] surgical treatment associated with the debridement (colostomy,