

Paraneoplastic Polyarthrititis Revealed by Gastric Cancer: A Case Report

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ABSTRACT

Introduction: Paraneoplastic syndromes are defined by signs related to an occult or already recognized tumor, most often malignant. These signs have no direct anatomical relationship with the causative tumor, are not due to compression or invasion of anatomical structures by the tumor, and typically disappear after effective treatment of the tumor. The diagnostic difficulties of paraneoplastic polyarthrititis arise from their onset before the cancer is discovered, over periods of up to two years. In the literature, paraneoplastic polyarthrititis is rare, occurring more in men than in women, with a sex ratio of 1.7 and an average age of 50.

Clinical Case: We report the clinical case of a young female patient admitted to the internal medicine department of Ibn Rochd hospital in Casablanca for subacute polyarthrititis revealing metastatic gastric cancer. The particularity of our work is presented by the occurrence of an atypical form of paraneoplastic polyarthrititis in a young paucisymptomatic patient.

Conclusion: Polyarthrititis can reveal gastric adenocarcinoma, hence the interest of thinking of a paraneoplastic syndrome in the face of any polyarthrititis, even in the face of a non-evocative clinical picture.

Keywords: Paraneoplastic Arthritis, Gastric Cancer, Paraneoplastic Syndrome, Anemia

Introduction

Paraneoplastic syndromes are defined by signs related to an occult or already recognized tumor, most often malignant. These signs have no direct anatomical relationship with the causal tumor, not resulting from compression or invasion of anatomical structures by the tumor, and typically disappear after effective treatment of the tumor (Gassara *et al.*, 2020; Kisacik *et al.*, 2023).

The diagnostic challenges of paraneoplastic polyarthrititis stem from its occurrence before the discovery of cancer, over periods that can extend up to two years (Lucas and Perdriger, 2018). In the literature, paraneoplastic polyarthrititis is rare, affecting men more than women, with a sex ratio of 1.7 and a mean age of 50 years (Manger and Schett, 2014).

We report here the clinical case of a young patient admitted to the internal medicine department of Ibn Rochd Hospital in Casablanca for subacute polyarthritis revealing metastatic gastric cancer. The particularity of our case lies in the occurrence of an atypical form of paraneoplastic polyarthritis in a young patient with few symptoms. The interest of this presentation is to emphasize the possibility of a paraneoplastic origin even in cases with atypical clinical presentations.

Clinical Case

This concerns a 31-year-old patient who has been followed for chronic anemia for 8 years and has been taking iron supplements. She was admitted to the internal medicine department for an etiological assessment of subacute bilateral polyarthritis involving both knees, both ankles, both elbows, both wrists, proximal and distal metatarsophalangeal joints (MTP), metacarpophalangeal joints (MCP), and proximal (IPP) and distal (IPD) interphalangeal joints. Please see Figures 2 and 3. This polyarthritis is associated with respiratory symptoms, including stage II dyspnea and dry cough, as well as digestive symptoms, including non-febrile acute liquid diarrhea, all occurring in the context of asthenia and a weight loss of 5 kg over one month.



Figure 1: Bilateral, symmetrical polyarthritis of the IPP, IPD, MCP and 2 wrists.



Figure 2: Bilateral, symmetrical polyarthritis of the PTMs and both ankles.

The assessment carried out during her admission revealed:

An inflammatory syndrome: CRP at 83.2 mg/l, an accelerated ESR at 53 mm.

Complete blood count (CBC) revealed hypochromic microcytic iron deficiency anemia at 7.9 g/dl, with low ferritin levels at 9.93 ng/ml.

The immunological assessment came back negative, including anti-cyclic citrullinated peptide (anti-CCP) antibodies, rheumatoid factors, and anti-nuclear antibodies (ANA). Serologies (syphilis, HIV, hepatitis B and C) also returned negative results.

Faced with refractory anemia to iron treatment, an esophagogastroduodenoscopy was performed, which incidentally revealed a bleeding, non-ulcerated budding mass at the 1/3 of the lesser curvature. Biopsy of the mass revealed a moderately differentiated tubular adenocarcinoma infiltrating the fundic mucosa.

A thoracoabdominopelvic CT scan, conducted as part of staging, revealed: Gastric tumor thickening associated with deep lymphadenopathies suggestive of peritoneal carcinomatosis, multiple secondary pulmonary nodules resembling balloon clusters, and bilateral lateral uterine formations consistent with ovaries (Krukenberg tumors).

In light of the endoscopy and biopsy results, the diagnosis of metastatic gastric adenocarcinoma revealed by subacute polyarthritis was unexpectedly established during the etiological investigation of her anemia. The patient was referred to the oncology department for palliative chemotherapy.

Discussion

Polyarthritis is a common reason for consultation in internal medicine, requiring a standardized approach. It is important to specify the nature of the polyarthritis, whether acute, subacute, or chronic. Reactive arthritis secondary to a viral or bacterial infection must be ruled out in the case of acute polyarthritis. In cases of subacute or chronic polyarthritis, rheumatoid arthritis should be ruled out first, as well as arthritis secondary to hematologic disorders or solid cancers, although they are rare in young women (Bradley and Pinals, 1983).

Subacute or chronic polyarthritis in a young woman often raises suspicions of infectious or immunological origins, particularly rheumatoid arthritis or systemic lupus erythematosus. However, in our

patient, the origin was paraneoplastic. Her anemia was not explained by inflammation, as it had been present for 8 years, nor by iron deficiency, as she had received multiple iron treatments.

Paraneoplastic polyarthritis often occurs in older individuals with asymmetric joint involvement. It is also characterized by negative immunological tests, and corticosteroids typically provide only partial therapeutic response. See table (De Figueiredo *et al.*, 2018; Fam, 2000; Ashouri and Daikh, 2011).

Table 1: Characteristics of paraneoplastic and inflammatory polyarthritis.

	Paraneoplastic Polyarthritis	Inflammatory Polyarthritis
Age	Elderly Subject	Young Subject
Sex	Male	Female
Rheumatological History	Present	Absent
Character of Polyarthritis	Asymmetrical	Symmetrical
General Condition	Very Altered	Generally Preserved
Radiological Findings	Absence of Erosions	Presence of Erosions
Immunological Findings	Negative	Positive
Response to Corticosteroids	Partial or No Response	Good Response

The pathogenesis of paraneoplastic arthritis remains poorly understood. Circulating cytokines, immune complexes, abnormalities in cell-mediated immunity, and cross-reaction between tumor antigen and synovial tissue have been proposed as underlying mechanisms of paraneoplastic polyarthritis (Bradley and Pinals, 1983).

In our patient, a particular feature was the absence of digestive symptoms, notably epigastric pain or vomiting. Digestive endoscopy was requested due to the presence of chronic anemia and lack of response to iron treatment. The inflammatory nature of the polyarthritis observed in the patient led to an immunological assessment, which returned negative.

According to Zupancic. *et al*, diagnosing paraneoplastic arthritis can be challenging in the absence of suggestive signs of malignancy (Tsochatzis *et al.*, 2005). This difficulty is illustrated by two patients who initially presented with symptoms suggestive of inflammatory arthritis but were later diagnosed and treated for rheumatic diseases. In the first patient, malignancy was discovered following a routine chest X-ray showing radiological features suggestive of lung cancer. Similarly, in the second patient, the diagnosis of stage III ovarian carcinoma was clinically preceded by abdominal pain (Sachdev Manjit Singh *et al.*, 2021).

In the literature, the most common solid tumors responsible for paraneoplastic polyarthritis are lung or breast adenocarcinomas (Gassara *et al.*, 2020; Kısacık *et al.*, 2023; Lucas and Perdriger, 2018). However,

in our case, the adenocarcinoma was gastric. The prevalence of paraneoplastic polyarthritis secondary to gastric cancer is not specified in the literature.

Therapeutically, paraneoplastic polyarthritis is often refractory to non-steroidal anti-inflammatory drugs and corticosteroid therapy (Şendur, 2012). However, it responds well to treatment of the underlying tumor. (De Figueiredo *et al.*, 2018).

The use of corticosteroids or conventional immunosuppressive therapy to treat paraneoplastic arthritis may lead to temporary symptom resolution but delays diagnosis (Rast *et al.*, 2018). Conversely, treatment of the primary cancer usually results in symptom resolution (Şendur, 2012).

In our case, the patient had metastatic gastric adenocarcinoma and was referred to the oncology department for palliative chemotherapy due to the extent of the tumor.

Conclusion

Paraneoplastic polyarthritis remains a rare etiology. It can be mistakenly treated as a rheumatic disease, leading to delayed diagnosis. Despite its rarity, the diagnosis should always be considered, even in the presence of an atypical clinical presentation not suggestive of malignancy. This underscores the importance of our clinical case where the diagnosis was incidentally made in a young patient.

Consent for Publication: The patient's consent had been obtained.

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