

Did the first description of patients with polymyalgia rheumatica take place in Scotland or in Denmark?

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SUMMARY

The first description of polymyalgia rheumatica (PMR) is generally attributed to Dr. Bruce. In an 1888 article entitled *Senile rheumatic gout*, he described five male patients aged from 60 to 74 years whom he had visited at the Strathpeffer spa in Scotland. In 1945, Dr. Holst and Dr. Johansen reported on five female patients examined over several months at the Medical Department of Roskilde County Hospital in Denmark. These patients suffered from hip, upper arms, and neck pain associated with elevated ESR and constitutional manifestations such as low-grade fever or loss of weight. In the same year, Meulengracht, another Danish physician, reported on two patients with shoulder pain and stiffness associated with fever, weight loss, and an increased erythrocyte sedimentation rate. As in the five patients reported by Dr. Holst and Dr. Johansen, a prolonged recovery time was recorded. On reading and comparing these three accounts, we question whether it is correct to attribute the first description of PMR to Dr. Bruce and put forward shifting this accolade to the three Danish physicians.

Key words: Polymyalgia rheumatica, history of polymyalgia rheumatica, acute senile rheumatic gout, peri- and extrarticular rheumatism.

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■ INTRODUCTION

Polymyalgia rheumatica (PMR) is a common inflammatory rheumatic disease in the elderly, 2-3 times more common in women, characterized by bilateral pain in the shoulder and pelvic girdles often of sudden onset, associated with morning stiffness lasting >45 minutes (1-3). Some patients with PMR complain about additional, systemic manifestations such as fever, general discomfort, fatigue, loss of appetite, and loss of weight. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) concentrations are usually high at the time of diagnosis. However, the diagnosis of PMR still remains clinical, and no specific laboratory tests are available. There are several PMR-like diseases, and differential diagnosis is not always easy in everyday clinical practice (4, 5).

The first account of PMR is generally attributed to Bruce. His article, entitled *Senile rheumatic gout*, was published in 1888 (6). We question the correctness of this attribution and suggest that PMR was first described by Danish physicians in 1945.

■ MATERIALS AND METHODS

Bruce's cases were compared with the 1945 reports by Holst, Johansen, and Meulengracht.

■ RESULTS AND DISCUSSION

In 1888, Bruce reported on five male patients aged from 60 to 74 years whom he had visited at the Strathpeffer spa in Scotland. Bruce suggested that these patients might be suffering from a new disease different from gout and rheumatoid arthritis

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and called this new condition acute senile rheumatic gout. On reading his article, however, it is doubtful whether we would currently identify all of Bruce's five cases as PMR. Firstly, all five patients greatly improved after taking sulfur waters internally, frequent spa baths, and thorough massages. In particular, case 1 was completely cured in 3 weeks. Yet, thermal therapies have not been shown to be effective in patients with PMR. Secondly, in four out of five of Bruce's patients, exposure to cold temperatures triggered the onset or worsening of musculoskeletal manifestations. However, as shown by a recent systematic review and meta-analysis, there is no seasonal onset for PMR, and there is no correlation between exposure to cold and the onset of PMR (7). Finally, Bruce's patient 3 was unable to turn in bed, feed, or dress himself as a consequence of shoulder and pelvic girdle involvement. However, he also showed non-PMR symptoms: severe stomach pain and subsequent constipation, and a series of nervous attacks resembling fainting fits. In addition, his urine was of a dark color and often contained sediment like red sand.

In conclusion, based on current knowledge, Bruce's article seemed misleading. Indeed, a whole range of PMR-like and non-PMR manifestations were bundled up in an all-inclusive account.

In 1945, Holst and Johansen reported on five female patients examined at the Medical Department of Roskilde County Hospital in Denmark (8). These patients, aged 48 to 61, suffered from pain in the round hip, upper arms, and neck associated with elevated ESR and constitutional manifestations such as low-grade fever or loss of weight. None of these patients showed "deformities of joints, exudations, or any considerable swelling of the capsule". Four patients were followed for 18 to 24 months, and all had significant clinical improvement. In two cases, the ESR was at a sex- and age-adjusted normal value at the time of the last observation. Salicylic acid was used in all patients; in two cases, it was associated with B vitamins and/or physical therapies (short-wave diathermy and X-ray irradiation). Salazopyrin was also added in

two patients, but in one of them, it had to be discontinued on account of exanthema.

Holst and Johansen noted that the symptoms arose from the extra- or peri-articular soft tissues and therefore proposed the name "peri- and extrarticular rheumatism" for this new, special type of rheumatic disease. Furthermore, they suggested that a more frequent assessment of temperature and ESR in patients with pain around the scapular and pelvic girdles would facilitate the recognition of this rheumatic disease. According to some investigators, this report provides the best description of PMR up to that time (9-11).

In the same year, Meulengracht, another Danish physician, reported on two patients with shoulder pain and stiffness associated with fever, weight loss, and greatly increased ESR. Similarly to Holst and Johansen's five patients, a prolonged recovery time was recorded. Meulengracht named this disease "peri-arthritis humero-scapularis" and pointed out that it could be confused with a scapulo-humeralis peri-arthritis (12).

There is a 57-year gap between Bruce's account and the case reports by Holst, Johansen, and Meulengracht. Similar case series were reported in the following years, and differences between PMR and seronegative rheumatoid arthritis were confirmed (13-15). In 1957, Barber first proposed the name polymyalgia rheumatica (16).

In 1979, Bird et al. suggested that a patient might be regarded as having probable isolated PMR if any three or more of these seven characteristics are fulfilled:

- 1) age >65 years;
- 2) bilateral shoulder pain/stiffness;
- 3) initial ESR >40 mm/hour;
- 4) duration onset <2 weeks;
- 5) morning stiffness (MS) >1 hour;
- 6) depression and/or loss of weight;
- 7) upper arm tenderness bilaterally.

In particular, the duration of onset refers to the time taken for symptoms to reach their full-blown picture (17). Lastly, in 2012, a European League Against Rheumatism/American College of Rheumatology (EULAR/ACR) collaborative initiative developed new classification criteria for patients aged 50 or older suffering from new-onset

(<12 weeks) bilateral shoulder pain associated with abnormal CRP and/or ESR (18). The EULAR/ACR score algorithm was based on these criteria:

- 1) MS >45 minutes (2 points);
- 2) hip pain or limited range of motion (1 point);
- 3) absence of rheumatoid factor or anti-citrullinated peptide antibodies (2 points);
- 4) absence of other joint pain (1 point);
- 5) at least one shoulder with subdeltoid bursitis, biceps tenosynovitis, or glenohumeral synovitis; and at least one hip with synovitis or trochanteric bursitis (1 point);
- 6) both shoulders with subdeltoid bursitis, biceps tenosynovitis, or glenohumeral synovitis (1 point).

According to these criteria, a patient with a score of 4 or more (without ultrasound criteria) or with a score of 5 or more (clinical and ultrasound criteria) is categorized as having PMR.

It is not superfluous to remember that both Bird's and EULAR/ACR criteria are to be applied to those patients whose signs and symptoms are not better explained by alternative diagnoses.

Could some of Bruce, Holst, Johansen, and Meulengracht's patients be classified as

having at least probable PMR according to these criteria? This type of assessment, albeit intriguing, is far from easy. Specifically, we tried to assess the presence or not of a probable PMR following Bird's criteria (Table I). It was impossible to make a proper assessment in accordance with EULAR/ACR criteria because only two clinical criteria (hip pain and limited range of motion; absence of other joint pain) were assessable in the 12 patients.

MS duration was never assessed in these patients; ESR and RF were not known in 1888, and Waaler's pivotal studies date back to 1940 (19). Additionally, depression showed a very low sensitivity in the validation study by Bird et al., and it has never been proposed by any criteria for PMR published after 1979 (20). Nevertheless, this assessment, despite its limitations, also shifted the balance in favor of the Danish physicians' reports. Only Bruce's case 4 had a total score of 3, while all seven Danish patients had a total score of at least 3.

■ CONCLUSIONS

The question of whether the history of PMR should start more recently than previously assumed is not mere academic speculation. Indeed, a sound answer and consensus may

Table I - Probable polymyalgia rheumatica by presence or not of Bird's criteria.

	Age >65	BSP	i.ESR >40	d.o. <2 w.	MS >1 h	D/L.W.	bUAT	Total score
B1	yes	no	n.a.	yes	n.a.	no	no	2
B2	yes	no	n.a.	no	n.a.	yes	no	2
B3	no	no	n.a.	no	n.a.	no	no	0
B4	yes	no	n.a.	yes	n.a.	yes	no	3
B5	yes	no	n.a.	no	n.a.	yes	no	2
HJ1	no	yes	yes	yes	n.a.	no	yes	4
HJ2	no	yes	yes	yes	n.a.	yes	yes	5
HJ3	no	yes	yes	yes	n.a.	no	yes	4
HJ4	no	yes	yes	yes	n.a.	no	yes	4
HJ5	no	yes	yes	no	n.a.	no	yes	3
M1	no	yes	yes	yes	n.a.	yes	yes	5
M2	yes	yes	yes	yes	n.a.	yes	yes	6

BPS, bilateral shoulder pain; i.ESR, initial erythrocyte sedimentation rate; d.o., duration onset; MS, morning stiffness; w, weeks; MS, morning stiffness; D/L.W., depression/loss of weight; bUAT, bilateral upper arm tenderness; n.a., not assessed; B, Bruce; HJ, Holst and Johansen; M, Meulengracht.

contribute to a better distinction between what PMR is and what ultimately resembles it.

We hope that our brief report will encourage others to express their views and open a constructive discussion around this issue.

Contributions

CM, MI, AC, conceptualization, formal analysis, investigation, data curation, review and editing; CM, MI, original draft preparation. All authors have read and agreed to the published version of the manuscript.

Conflict of interest

The authors declare no potential conflict of interest.

Ethics approval and consent to participate

Not applicable.

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Availability of data and materials

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