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Aam assessment instrument for disease activity in *Aamavata*: Scope and challenges

Shrikant Wagh [a], Ashwinikumar Raut [b,*]

[a] Dr. D.Y. Patil College of Ayurveda and Research Centre, Dr. D.Y. Patil Vidyapeeth Society, Pune, India
[b] Kasturba Health Society - Medical Research Centre (KHS-MRC), Mumbai, India

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ABSTRACT

Development and validation of instruments based on concepts and clinical features described in Ayurveda is a constructive step towards translational research in Ayurveda. The clinical decisions in traditional medical practices often depend on clinical features. Such attempts from Ayurveda experts also contribute to strengthen an endeavour of integrative medicine. A recently published article in J-AIM on development and validation of Aam Assessment Instrument (AAI) to assess the disease activity in *amavata* is a landmark study. This study is undertaken in patients with rheumatoid arthritis (RA), a prototype of inflammatory arthritis.

We suggest that the specificity and reliability of AAI in RA and *amavata* would increase if complemented with joint count as described in Ayurveda texts. These joint counts can be further sub-classified for different types of inflammatory arthritides. Similarly, this AAI can also be validated and used for constitutional features in other *ama*-dominant non-rheumatic systemic diseases. This may need development of more comprehensive *ama*-specific features. We also need to consider the limitations of patient-reported outcome measures (PROMs) during further development and validation of AAI. Collective, multicentric, organized efforts by Ayurveda clinicians will lead to the development of reliable, sensitive, specific, and reproducible instruments for clinical assessments in various diseases.

It was a pleasure reading an article related to development and validation of an *Aam* instrument published recently in the JAIM [1]. There is indeed a need to develop such validated instruments based on clinical signs and symptoms. The clinical decisions taken in traditional medical practices are usually dependent on clinical features. The methodical development and rational validation of *ama* assessment instrument (AAI) provides a wide scope for the clinical assessment of the disease activity of *amavata* and evaluation of the efficacy of therapeutic measures during the management of these patients [1]. Incidentally, another published study recently has attempted to develop an instrument for assessment of *agni* and *ama* in *amavata* based on six parameters for *agni* and fourteen parameters for *ama.* [2] This study includes one parameter for coated tongue and four parameters for stool examination including its consistency, stickiness, smell, and sinking in water (as noted by the patient). Tongue and stool examination are the constituents of the *ashtavidha-pariksha* (eight-fold examination) described in classical text [3]. Arguably, the assessment of *ama* cannot be complete without the inclusion of these parameters.

The clinical features of *amavata* as reported in JAIM article were methodically reduced from 51 clinical features to 21 and further to 10 with the help of summated scores given by the 10 experts. Six features related to joints were purposely omitted "to keep the focus on the constitutional features of *ama.*" However, in the process of standardization and assessment convenience we need to ensure whether we lose on important assessment features. For example, although features of *ama* such as *arochaka* (tastelessness), *alasya* (laziness), and *gourava* (heaviness) are included in the shortlisted features, other important features of *amavata* such as *apakti* (indigestion), *nishtheeva* (watering of mouth), and *malasanga* (constipation) [4] are missing from the list. Moreover, translation of technical sanskrit terms into English and further deriving the information by formatting a questionnaire in a local language is always a challenge. For example, *sadan* and *vedana* are both attributed to pain whereas *arati* and *vyakulta* are attributed to restlessness in this paper. Moreover, patient reported outcome measures (PROMs) such as patient global assessment (PtGA) often used in rheumatoid arthritis assessment have accepted limitations due to the

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* Corresponding author.
E-mail addresses: sywagh@gmail.com (S. Wagh), ashuraut@gmail.com (A. Raut).

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wording and phrases used and the variability of patient-responses [5]. Thus, there is a need to cognize these inherent challenges in the development of AAI like assessment tools.

According to Ayurveda, *ama* is considered as an obligatory factor in the pathogenesis of most of the diseases although the degree of *ama* involvement can be variable. Moreover, specific *amaja* (predominance of *aam*) subtypes are described in various conditions such as *jwara* [6] (fever), *ajeerna* [7] (indigestion), *atisara* [8] (diarrhoea), and *trishna* [9] (thirst). *Aamavastha* is a peculiar stage in diseases like *grahani* (chronic bowel disease) and *pravahika* (recurrent dysentery) [10]. Also, *ama-visha* (vitiated *ama*) is known to lead into *visoochika* (severe diarrhoea) and *alasaka* (paralytic ileus) [11]. While *amavata*-like clinical features are described in *abhyantar phiranga* disease [12]. Furthermore, *aama* when afflicted with *dosha/dushya* it manifests relevant symptoms [13]. Hence it is possible that this validated AAI (of constitutional features) can be used in these above stated conditions too after further refinement and appropriate validation studies. Likewise, localized *ama* is described in conditions such as *vrana-shoth* [14] and *vidradhi* [15]. Noticeably, *ama* is also known to cause localized features in association with vitiated *dosha* [16]. These intricacies deserve attention while dealing with the ama assessment.

In the context of *amavata*, a completely blended complex of *ama* and *vayu* (*samprukta*) is responsible for such localized features [17]. Painful swelling of multiple joints due to a localized deposition of *aam* and *vata* complex is the cardinal feature of *amavata*. Hence, inflammatory joint count is an essential part of clinical examination for the diagnosis of *amavata*.

Amavata, in a wider context, is akin to inflammatory arthritis in contemporary medicine. Besides rheumatoid arthritis (RA), spondarthritis (SpA), psoriatic arthritis (PsA), inflammatory bowel disease (IBD) associated arthritis, chikungunya and other viral arthritides, gout, as well as arthritis in various inflammatory connective tissue diseases such as systemic lupus erythematosus (SLE) are all inflammatory arthropathies. *Sandhigata vata*, one of the nanatmaj (caused by vata alone) vatavyadhi, manifests as swelling, stiffness, and pain in the joints [18] However, swelling and prolonged stiffness indicate inflammatory rather than degenerative arthritis. Hence sandhigata vata needs further differentiation as *saama-sandhigata vata* and *niraam-sandhigata vata*. The bowel complaints may be totally absent (silent IBD) in a case of inflammatory spondylitis [19]. Skin psoriasis is akin to Eka *kushtha*, a type of *kshudra kushtha* wherein *ama* does not play any significant role. The concept of *vyadhisankar* (interdependent concomitant diseases) may explain concomitant arthritis and psoriasis. Moreover, PsA can develop much before the dermatological manifestations of psoriasis. It will be interesting to study the application of AAI in all these conditions of inflammatory arthropathies with further disease-specific evolution of the instrument and the challenges there off.

The referred study reports a lack of significant correlation between the AAI and DAS-28, which is apparently due to non-inclusion of joint count. The clinical examination of *amavata* is incomplete without the examination of individual joints. The joints of *hasta* (hand), *pada* (feet), *shir* (atlanto-occipital and temporomandibular joints), *gulfa* (ankle), *trik* (sacroiliac complex), *janu* (knee), and *uru* (hip) are affected in *amavata* [20]. Clinical examination of twenty-eight joints for swelling and tenderness, erythrocyte sedimentation rate (ESR), C-reactive proteins (CRP), PtGA, and physician global assessment (PhGA) are the constituents of DAS-28. It does not include examination of head, lower back, hip, ankle, and feet joints. The number of joints assessed for swelling and tenderness in various disease activity scores vary from 28 to 68 (Table 1). The swelling of hip joints cannot be assessed by clinical examination alone. Most of the hand and feet joints are included in 68-joint count. The examination of *trik* and atlantoaxial joints is not included in any of these examinations. The clinical examination of sacroiliac joints is performed by another score viz. Bath Ankylosing Spondylitis Metrology Index. Thus, there is a need for a new joint-count for the assessment of severity of *amavata* according to the descriptions in Ayurveda texts. A proposed list of 65 joints that need to be examined in *amavata* is indicated here (Table 1).

Table 1
The joints examined in various assessments for inflammatory arthritis.

28 Joints	44 Joints	68 joints	Proposed 65 joints
Shoulders	Shoulders	Shoulders	Shoulders (2)
Elbows	Elbows	Elbows	Elbows (2)
Wrists	Wrists	Wrists	Wrists (2)
MCP joints	MCP joints	MCP joints	MCP joints (10)
PIP + IP joints	PIP + IP joints	PIP + IP joints	PIP joints (8)
Knees	Knees	DIP joints	IP joints (2)
	Ankles	Hips	DIP joints (8)
	MTP joints	Knees	Hips (2)
	SC joints	Ankles	Knees (2)
	AC joints	Tarsus	Ankles (2)
		MTP joints	MTP joints (10)
		Toe PIP	Toe-PIP (10)
		TM joints	AA joint (1)
		SC joints	SI joints (2)
		AC joints	TM joints (2)

2.
AA = Atlantoaxial; AC = Acromioclavicular; IP = Interphalangeal; PIP = Proximal interphalangeal; MCP = Metacarpophalangeal; MTP = Metatarsophalangeal; SC = Sternoclavicular; SI = Sacroiliac; TM = Temporomandibular.

Clinical examination of joints for swelling and tenderness requires special training. Ultrasound examination and magnetic resonance imaging can be used for confirmation of suspected inflammation of a joint. Extra-articular systemic features such as fatigue and sleep disturbances, though clinically important, cannot be relied upon for the diagnosis of RA as well as *amavata* because they can be present in many other conditions too. The functional limitations in RA are mostly due to articular problems, more so when the joints are deformed. There is no denial of the patient perspective in DAS-28 which includes PtGA for the purpose of calculations of totality of outcome measures. PtGA, though apparently easy to record, depends upon a variety of factors such as psycho-social distress, functional incapability, inflammatory discomfort, biomechanical pain, and other concomitant illness. Moreover, PtGA depends on the functional status and may not indicate a high disease activity that needs escalation of disease modifying therapy [21]. Pain, anxiety, depression, fatigue, functional impairment, and diminished health-related quality of life are likely to be caused by central sensitization and lead to a very high PtGA despite very low disease activity as assessed by swollen joint counts [22].

Finally, it is noteworthy that an assessment of severity of a given disease as well as functional capacity of the diseased person are essential for the planning of therapy [23]. It also gives an idea about the response to therapy when assessed at each subsequent visit. Development and validation of such AAI is a very positive step in the direction of assessment of disease-severity and functional status of a patient. More comprehensive indices with collective, multicentric, organized efforts are needed to be established for diseases inflicted with *ama* including *amavata*.

Author contributions

SW was responsible for conceptualization, writing original draft and editing the manuscript whereas AR was responsible for conceptualization, reviewing and editing the manuscript.

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Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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