Title: Interviews with paediatric rheumatologists about psoriasis and psoriatic arthritis in children: How can specialties learn from each other?

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Dear Editor,

Opportunities exist for cross-specialty learning between dermatology and other medical disciplines; to the benefit of patients, clinical decision making and professional development. The Group for Research and Assessment of Psoriasis and Psoriatic Arthritis (GRAPPA) promotes the concept of 'psoriatic disease' to encompass psoriasis and psoriatic arthritis, and in their new disease management recommendations emphasise the importance of collaborative working between dermatologists and rheumatologists[1]. Whilst the group primarily focuses on adult disease we suggest that a similar model should exist for the paediatric population.

Juvenile psoriatic arthritis (JPsA) is a separate disease to psoriatic arthritis in adults and is a distinct subset of juvenile idiopathic arthritis (JIA); an inflammatory arthritis with onset under the age of 16 years and unknown aetiology[2]. Diagnosis of cutaneous psoriasis and psoriatic nail disease are both core components of the diagnostic classification for JPsA[3]. However, recognition of psoriasis in children can be more challenging compared to adult disease as the signs are often more subtle[4].

Local experience in our Nottingham combined paediatric dermatology and rheumatology clinics has demonstrated the shared benefit of cross-speciality learning for the assessment and management of JPsA.

To identify learning opportunities we conducted structured telephone interviews with UK paediatric rheumatologists. The interviews aimed to ascertain paediatric rheumatologists' current practice for assessing for psoriasis, the impact a diagnosis of JPsA has on the management of arthritis, experience of the presentation of skin and joint disease, and recommendations on improving the detection of JPsA.

In the UK paediatric rheumatology is a specialist commissioned service with 12 designated centres; a rheumatologist at each centre was identified through the British Society of Paediatrics and Adolescent Rheumatology (BSPAR). Rheumatologists were contacted and provided study information by email, verbally consented for audio recording and undertook the interviews as part of service evaluation.

The interviews were conducted by one interviewer (EBT) following an interview guide of open and closed questions and transcribed as intelligent verbatim. Categorical responses were analysed quantitatively as percentages and Framework Analysis was used to identify common themes in open responses[5].

Ten out of 12 (83%) centres of paediatric rheumatology expertise were interviewed based in England, Scotland and Northern Ireland; a moderate sample that are likely to be representative of current paediatric rheumatology practice. All clinicians had children with inflammatory arthritis under their care.

Table 1 presents the results of questions about the assessment for psoriasis and the impact a diagnosis of JPsA has on the management of arthritis. Hidden site psoriasis was defined as psoriasis occurring behind the ears or in the umbilicus, flexures, groin, genitals and natal

cleft. Only 50% of rheumatologists ask about or examine at least one hidden site, and a smaller number examine the groin (20%), genitals (10%) and natal cleft (10%). However, paediatric rheumatologists rated their confidence in assessing for psoriasis on average at 6.4 (0= no confidence at all, 10 =very confident).

The three most frequent suggestions to improve rheumatologists' recognition of psoriasis were a close working relationship with dermatologists, experiential training and a diagnostic tool. The majority of rheumatologists felt a diagnosis of JPsA compared to other JIA subtypes made an impact on the explanation given to patients/families (70%), the treatment plan (80%) and long-term outcomes (70%); highlighting the likely chronic and aggressive course of JPsA.

Eight rheumatologists (80%) found it difficult to estimate the percentage of patients presenting with skin, joint or simultaneous disease. Nine rheumatologists (90%) recommended that paediatric dermatologists could use the Paediatric Gait Arms Legs Spine (pGALS) tool to screen children with psoriasis for JPsA and a third (30%) commented that it is important to practise the technique[6].

Opportunities exist for paediatric dermatologists and rheumatologists to learn from each other. JPsA may be missed by paediatric rheumatologists if psoriasis occurring in hidden sites are not asked about and examined. It is important to examine these sites as there is sometimes discordance between patients' awareness of psoriasis and changes detected on examination. Future work could further explore dermatological practice amongst rheumatologists, including recognition of nail disease and disease severity. Dermatologists are best placed to develop paediatric psoriasis training material and diagnostic guidance for their rheumatology colleagues.

Currently there is no specific guidance on how children with psoriasis should be screened for JPsA. Available screening tools for adult psoriatic arthritis have not been validated for use in children[7]. Paediatric rheumatologists are likewise best placed to develop screening recommendations and related training for JPsA assessment by dermatologists. From these interviews pGALS should be considered as an annual screening tool for use in paediatric dermatology clinics.

We conclude that these interviews provide clear examples of the need for paediatric dermatologists and rheumatologists to learn from each other. Working groups, consensus work and research studies are needed to take forward these strategies to improve the detection of JPsA. At a time of limited healthcare resources, this work should open discussions about electronic multi-disciplinary working and teaching material.

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Structured Question	Number of respondents = n (%)				
When assessing children with inflammatory arthritis, do you routinely ask any questions about skin disorders?	Yes - 10/10 (100%) Directly ask about psoriasis – 7/10 (70%)				
When assessing children with inflammatory arthritis, are there any specific areas of the body where you ask about changes to the skin?	Scalp – 7/10 (70%), behind the ears – 1/10 (10%), face – 0/10 (0%), trunk – 0/10 (0%), umbilicus – 3/10 (30%), limbs – 3/10 (30%), acral – 0/10 (0%), nails – 4/10 (40%), flexures – 0/10 (0%), groin – 2/10 (20%), genitals – 0/10 (0%), natal cleft – 3/10 (30%). Hidden sites* asked about – 3/10 (30%)				
When assessing children with inflammatory arthritis, are there any specific areas of the body where you examine for skin changes?	Scalp – 9/10 (90%), behind the ears – 3/10 (30%), face – 2/10 (20%), trunk – 3/10 (30%), umbilicus – 3/10 (30%), limbs – 5/10 (50%), acral 1/10 (10%), nails – 5/10 (50%), flexures – 2/10 (20%), groin – 2/10 (20%), genitals – 1/10 (10%), natal cleft – 1/10 (10%) Hidden sites* examined – 5/10 (50%)				
How confident do you feel about diagnosing psoriasis on a scale of 1 to 10, 1 being not at all confident to 10 being very confident?	4 – 1/10 (10%), 5 – 2/10 (20%), 7 – 6/10 (60%), 8 – 1/10 (10%) Mean average score – 6.4				
In your experience, are there any reasons why making a diagnosis of psoriasis can be difficult? Example quotations provided.	Atypical appearance – 8/10 (80%) *"appearance is not characteristic"* *"not very scaly in the scalp…difficult if the GP has already started treatment. You aren't seeing the true clinical picture"*	Anatomical area of the body involved – 5/10 (50%) *"young children especially nappies and other excoriated areas"* *"palmar plantar involvement"*	Minimal amounts of skin disease – 6/10 (60%) *"small areas, can vary from time to time"* *"when the presentation is mild sometimes the family can dismiss or not notice the changes…a small patch in the scalp may be missed without a very thorough scalp examination"*	Similarity in appearance to other skin disease – 5/10 (50%) *"with the nails fungal needs to be excluded:* *"rashes can be difficult to diagnose to a non-dermatologist, can appear very similar"*	No family history – 2/10 (20%) *"no family history of psoriasis"*
Can you make any suggestions about what would help you diagnose psoriasis and therefore psoriatic arthritis? Example quotations provided.	Diagnostic test – 1/10 (10%) *"any imaging ….skin ultrasound"*	Diagnostic criteria – 3/10 (30%) *"a list of criteria for diagnosing psoriasis"*	Experiential training/clinical education – 4/10 (40%) *"active learning from colleagues… courses… clinical experience"*	Close working relationship between rheumatology and dermatology – 6/10 (60%) *"we have a combined clinic monthly"* *"review by a dermatologist who has experience around children and understands the importance around making an accurate diagnosis"*	Not a problem that needs to be addressed – 1/10 (10%) *"not a big problem"*
From your expertise, do you consider there to be a difference between juvenile idiopathic arthritis and juvenile psoriatic arthritis?	Yes – 8/10 (80%) No – 2/10 (20%) Specific rheumatological features in JPsA– 7/10 (70%) which include: dactylitis 5/10 (50%), enthesitis – 1/10 (10%), small joints of the hand/DIP -4/10 (40%), minimal swelling/drier synovitis/subtle -3/10 (30%), more aggressive -1/10 (10%), systemic inflammation – 1/10 (10%) Each subtype is a different disease – 1/10 (10%)				
In your experience do you feel there are any particular joint patterns in children with psoriatic arthritis?	Small joints of the hand/DIP(60%), large joints (50%), dactylitis (40%), oligoarthritis/asymmetric (40%), mid/hindfoot (30%), sacroilitis (20%), polyarticular (20%), minimal swelling (10%) and no clear pattern (10%).				
Does a diagnosis of juvenile psoriatic arthritis instead of juvenile idiopathic arthritis influence what you explain to children and their parents? Example quotations provided.	Yes – 7/10 (70%) No – 3/10 (30%)				
	Helps disease explanation (skin and joints) – 2/10 (20%)	Comorbidities – 2/10 (20%) *"need to monitor eyes*	Cautious explanation of genetics - 2/10 (20%) *"try to stay away from the*	Persistent disease and risk of joint damage – 6/10 (60%)	Treatment strategy – 4/10 (40%) *"early intervention*

	"starting point for explaining autoimmune disease …helps explain treatment as you can use methotrexate for skin and joints"	*for uveitis"*	*blame of genetics"*	*"prolonged …. can be more damaging"* *"less reassuring regarding spontaneous remission"*	*can be very effective… slightly different approach"* *"intermittent lifelong immunosuppression"*
Does a diagnosis of juvenile psoriatic arthritis instead of juvenile idiopathic arthritis influence your treatment plan? Example quotations provided.	Yes – 8/10 (80%) No – 2/10 (20%)				
	Lowers the threshold for treatment escalation 5/10 (50%) *"lower threshold for starting a DMARD, methotrexate in patients with involvement of less than 5 joints"* *"inclined to start systemic earlier… lower threshold to escalate treatment"*		Choice of biologic therapy – 2/10 (20%) *"more likes to choose Humira over Enbrel"*	Combined approach for skin/uveitis and joints – 2/10 (20%) "if uveitis and skin involvement may alter treatment used"	
In your experience, are long-term outcomes different in children with psoriatic arthritis compared to juvenile idiopathic arthritis? Example quotations provided.	Yes – 7/10 (70%) No – 3/10 (30%)				
	Persistent disease – 5/10 (50%) *"can have ongoing disease into adulthood"* *"less likely to go into remission"*		Risk of long-term joint damage and comorbidity – 4/10 (40%) *"adults have been found to have damage from undertreated psoriatic JIA"* *"appears to be more aggressive and erosive but we don't have that information yet"*	Increased need for aggressive treatment – 2/10 (20%) *"tend to start methotrexate and biologic earlier in these patients"*	

Table 1: Responses to questions about how paediatric rheumatologists assess children with inflammatory arthritis for psoriasis and the impact a diagnosis of juvenile psoriatic arthritis has on their management of arthritis. *Hidden psoriasis refers to psoriasis behind the ears, umbilicus, flexures, groin, genitals and natal cleft.