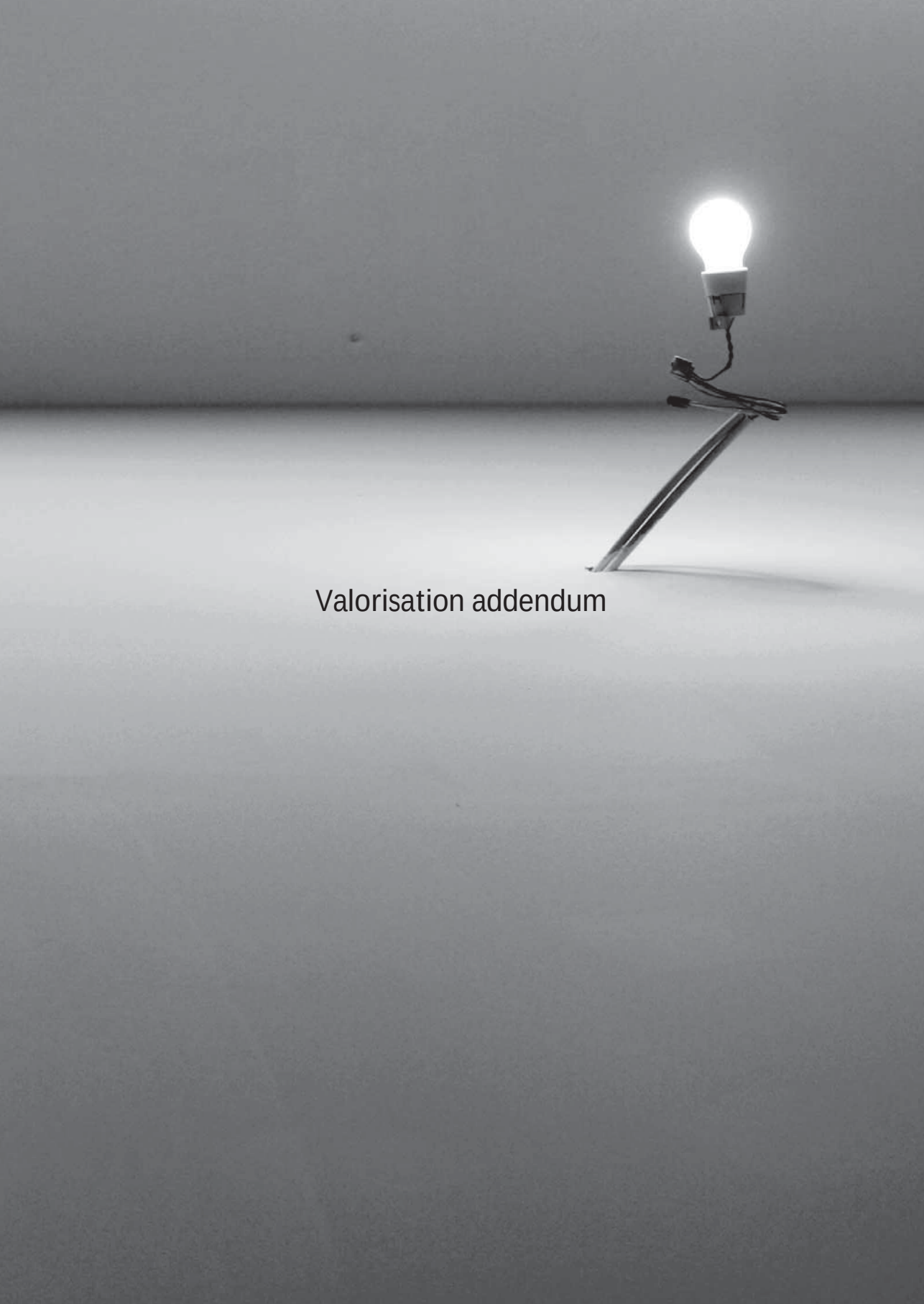
Cerebral and cardiac signal monitoring in fetal sheep with hypoxic-ischemic encephalopathy



Valorisation addendum

VALORISATION ADDENDUM

Valorisation refers to the process of how academic research can be utilized and translated to clinical and societal benefit. The relevance of the research presented in this thesis is described in the section below.

Part I: epidemiology of spondyloarthritis

Quantification of the burden of rheumatic conditions is important for raising awareness among health care professionals, setting research priorities and initiating a policy debate.[1] Rheumatic conditions have major impact on the individual patient, but also on society. Also in the case of spondyloarthritis (SpA), important decreases in almost all aspects of health related quality of life are reported. The onset at a relatively young age, before the fourth decade, adds to the years lived in disability for an individual.[2] As a consequence of decreased functioning, SpA has an adverse impact on the patient and family by reduced participation in social roles.[3,4] The indirect costs related to SpA are four times as high as the direct costs, reflecting the important impact of the disease on work participation in terms of sick leave, disability pensions and early retirement.[5] To extrapolate how this individual burden would affect society, appropriate data on the epidemiology are warranted. In this thesis, we found that the global prevalence of SpA was 0.55% (95% Confidence Interval (CI): 0.37-0.77). This prevalence is comparable to that of rheumatoid arthritis. Substantial variation across geographic regions was however found. For instance, the prevalence of SpA in East Asia was 0.79% (CI: 0.48-1.18). The study described in this thesis adds to the available evidence on epidemiology of rheumatic diseases that can contribute to prioritize research, but also to inform health care systems at the country level, when allocating budgets to improve diagnosis, treatment and prevention of work disability.[1,6-8]

Part II: the use of MRI in early detection of axial spondyloarthritis

The introduction of MRI for detecting active sacroiliitis has revolutionized the diagnosis of axial SpA (axSpA), making an early diagnosis possible. This thesis showed that a positive MRI is a reliable finding: a positive MRI at baseline was strongly associated with a positive MRI of the sacroiliac joints (MRI-SIJ) over time, particularly in HLA-B27 positive patients. This is important for clinicians, because it suggests that a diagnosis of axSpA incorporating a positive MRI is robust and credible. Furthermore, the post-gadolinium diethylenetriaminepentaacetic acid (Gd-DTPA) MRI sequence can be safely omitted, which increases the feasibility of MRI, since it saves time and reduces costs.

Further, in axSpA it is a challenge to identify the appropriate target for treatment: should it be disease activity, prevention or delay in progression of structural damage, or both? In this thesis, we focused on the relation between inflammation and development of structural damage (erosions and fatty lesions) on MRI. We have shown that fatty lesions on MRI-SIJ preferably develop after bone marrow edema (BME) has subsided. Other studies have suggested that fatty lesions at vertebral edges predict the development of new syndesmophytes.[9] BME may therefore be the first domino that sets off the chain that leads to development of fatty lesions and eventually new bone formation (syndesmophytes).[10,11] The true relation between BME and new bone formation still needs to be disentangled in further research. This thesis has contributed in one of the many steps to unravel the relation between inflammation and structural damage on MRI in order to enable identification of different treatment targets.

Part III: early identification of spondyloarthritis in primary care

Musculoskeletal disorders (MSD) are among the most common reasons for consulting a GP and have a major impact on healthcare resources.[12] The Global Burden of Disease 2010 study found that MSD, including rheumatic disorders, were the second main contributor to the number of years lived with disability.[1] Part of this burden is avoidable. The importance of MSD as major cause of (avoidable) disability, however, seems insufficiently acknowledged by GPs.[13,14] Training in rheumatology is rarely mandatory in general practice training programs, despite the large number of patients that present themselves in primary care with rheumatic disorders.[15] Nonetheless, it seems that musculoskeletal conditions are not a priority in primary care.[16,17]

Making a diagnosis of axSpA is often delayed up to 10 years or longer, suggesting that opportunities for early recognition and referral have been missed in primary care.[18,19] Several referral strategies that promote early referral of axSpA have been developed, but successful implementation may be hampered by ineffective referral patterns due to lack of knowledge about axSpA.[20-23] From this thesis, we learned that there is room for improvement with regard to the level of knowledge of GPs about their ability to identify and refer patients with suspected axSpA. Changing clinical practice behavior and assessing such change is a real challenge. The evidence that educational interventions may actually change anything is limited.[24] Lack of time and resources often contribute to failure of the education intervention.[24] This thesis shows that the use of standardized patients (SPs), is a feasible and informative approach to assess the impact of an educational intervention. More importantly, a multi-faceted educational program can play a key role in improving disease recognition

and referral of patients suspected for SpA. This important finding may further improve timely diagnosis and initiation of treatment of patients with SpA.

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