Research finds sonography can detect muscle, bone infections

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Pune: The use of ultrasound sonography is no longer limited to scanning pregnancies, kidney stones and stomach ailments. A study, by a Pune-based radiologist has concluded that muscle, tendon and bone-related infections — medically known as musculoskeletal (MSK) infections can be diagnosed at an early stage using ultrasound sonography.

The study, led by Amit Khurat, associate professor, department of radiology at Dr D Y Patil Medical College in Pimpri, may provide a game-changer in diagnostic services. MSK infections are common in India because of poor immune status and widespread tuberculosis (Tuberculosis does not involve the chest alone, but almost all body parts, including bones, joints, tendons and muscles). These infections, experts say, are usually diagnosed late. By the time the diagnosis and results come in, there is irreparable damage to the muscles, bones and tendons.

"Over a period of more than six years, we studied all sorts of infections of the musculoskeletal system, involving bone, muscle and tendon, on ultrasound. We followed that up serially with fluid aspiration of the infected area, biopsies of infected tissues and other imaging modalities like X-ray, CT and MRI to corroborate the results. We found ultrasound to be a great screening technique. It is a one-stop diagnostic tool for many infections wherein no further diagnostic tests were needed, thus helping in early diagnosis," Khurat said TOI on Friday.

The research earned Khurat a gold medal and the Ashok Mukherjee Award at the 67th National Radiology Conference held in Agra in January.

"For using ultrasound for MSK infections, you require a high resolution linear transducer. Nowadays, it is easily available and all ultrasound equipment is equipped with the transducer," he said. He added that the absence of a transducer in older equipment could pose a hurdle. Khurat also emphasized on the need for good team work as the test requires a multidisciplinary approach between various departments, such as orthopedics, medicine, surgery, intervention and pathology. Expertise and skill set necessary to conduct the test can be developed through practise and hands on training. "In order to popularize the test, we need to sensitise physicians to refer such cases for ultrasound before ordering higher diagnostic tests. Any lumps and bumps should be referred for MSK ultrasound. It can also tell us if further tests are necessary," Khurat said.

An X-ray can pick up changes associated with MSK infections only at a later stage and, despite sensitivity, MRI and CT scans can catch it only to a certain extent as it lacks specificity. In addition, these tests are costly and have a long waiting period. Moreover, interventions cannot be performed using MRI.

Taking these difficulties into account, the researcher carried out the six-and-a-half year study on ultrasound for MSK infections under the guidance of senior radiologist (Brig) Amarjit Singh, who is also dean of Dr D Y Patil Medical College, Pimpri, Pune.

However, some questions remain over the concreteness this year of MSK infections' diagnosis made by sonography scans. "Findings by ultrasound may not necessarily always be conclusive as with diagnostics but differentials can be given. Nonetheless, it can help in diagnosing the pathology, telling us exactly where the infection is located, the size of the pathology and its vascularity as well as the probable diagnostic possibilities," Khurat said.

"Since we are in era of evidence-based medicine, we need to confirm our findings by either fine needle aspiration test (FNAC), biopsy tests, intra-operative findings, CT/MRI/X-ray results and follow ups," he added.

Senior orthopaedic surgeon K H Sancheti, who termed the results a significant finding, said it needs to be taken up at hospitals across the country. "Using sonography to detect MSK infection will be significantly cheaper than availing high-end diagnostic tests like MRI and CT. The research is especially relevant in India as the poor cannot avail the benefit of high-end services," he said.