

Radiologic Guided Cortisone Injections

WHAT IS CORTISONE?

Cortisone is a corticosteroid and is used in the treatment of a number of medical conditions. It has strong anti-inflammatory properties, which makes it very useful in the treatment of pain induced by inflammation.

WHY USE RADIOLOGIC GUIDANCE TO INJECT CORTISONE?

The tip of the needle used for the cortisone injection is placed precisely in the right place using ultrasound, CT (computed tomography) or fluoroscopy. This ensures that the cortisone is injected accurately into the correct location to maximise the anti-inflammatory effect.

WHAT COMMON CONDITIONS IS A CORTISONE INJECTION USED FOR?

Arthritis – inflammation of a joint, including the spine

- Bursitis – the most commonly injected site of bursitis is the subacromial bursa of the shoulder
- Nerve compression – most commonly in the spine
- Tendinosis or tenosynovitis-inflammation of the tendon
- Frozen shoulder – this cortisone injection is often accompanied by hydrodilatation (which uses sterile water to stretch the joint)

IS THERE ANY PREPARATION BEFORE THE CORTISONE INJECTION?

No special preparation is required prior to cortisone injections. In some cases, you may be advised to have a driver accompany you after the procedure.

HOW IS THE CORTISONE INJECTION PERFORMED?

The cortisone injection is performed by a Radiologist (Specialist Medical Doctor). The skin is cleaned with antiseptic. Local anaesthetic is applied to the skin and deeper tissues into which the cortisone needle will be applied. Scanning equipment (ultrasound, CT or fluoroscopy) is used to guide the cortisone needle into the exact position. Once the needle is in the correct position, the cortisone is injected, usually together with a long acting local anaesthetic.

HOW PAINFUL ARE CORTISONE INJECTIONS?

This varies from person to person, but in most cases, cortisone

injections are well tolerated. The amount of discomfort depends on a number of factors, including:

- Severity of the inflammation in the joint or bursa
- The body part being injected (e.g. hands and feet are more sensitive)

WHAT WILL I NOTICE AFTER THE INJECTION?

The pain often improves shortly after the injection due to the local anaesthetic. However, this will wear off in a few hours and the pain may return. The cortisone usually takes two to three days to take effect. In most cases, there will be improvement in pain by the end of the 1st week, although in some cases it may take longer than a week.

RISKS OF CORTISONE INJECTIONS?

Radiologic guided cortisone injections are usually straightforward and safe procedures, and complications/side effects are unusual.

Complications include:

- Allergy to any of the substances used (antiseptic, local anaesthetic, cortisone or dressings)
- Infection – a rare but serious complication, especially if a joint is involved
- Palpitations and hot flushing
- Tendon weakening

These risks are weighed up against the potential benefits of pain relief by the referring doctor and the Radiologist.

By Dr Richard Ng



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Renal Colic

The choice of radiological investigation for suspected renal colic is either CT Urogram (non-enhanced CT) or Sonography +/- plain radiography. The intravenous urogram has been consigned to history.

Urolithiasis has a prevalence of 2-3% ; 40-60 years of age. Incidence of 1-2 per 1,000; peak 20-40 years of age. M:F 3:1.

Natural history and prognosis

- Spontaneous passage: 80% < 4mm, 50% < 4-6mm, 20% > 8mm
- Complications: obstruction, infection
- Prognosis: recurrence without treatment; 10% at 1 year, 35% at 5 years, 50% at 10 years

Types of Stones

75-80% calcium, 10-15% struvite, 5-10% uric acid, others

Clinical features

- Upper Tract: asymptomatic, flank pain, small nonobstructing stones may be symptomatic
- Ureteral stone: acute pain radiating to groin
- Lower tract: asymptomatic, dysuria, pain radiating to perineum etc.
- Lab urinalysis: haematuria, crystals

Treatment

- Hydration
- ESWL, endoscopic or percutaneous removal

Investigation

The gold standard investigation of choice is the CT urogram. All stones are fairly uniform on CT. CT has shown that plain radiography misses the majority of stones (small size, overlying structures etc.).

Secondary signs of obstruction on CT

- Soft tissue rim sign (wall oedema)
- Vesicoureteric junction oedema
- Hydronephrosis / hydroureter

- Perinephric or periureteric stranding

At the time of the CT Urogram, if positive, a plain radiograph will often correlate the position of a stone, this is useful for follow-up as repeat CT is to be avoided (radiation dose).

Studies show an overall sensitivity of

- CT 96%
- Sonography 61%
- For stone detection specificity for both is 100%

When the two modalities are compared for detection of relevant concurrent abnormality (e.g hydronephrosis) sensitivity increases to 92% (US) and 100% (CT).

CT can detect other pathology that can mimic renal colic, e.g. diverticulitis. Radiation dose for CT Urogram is in the region of 10-15 mSV, about 50% greater than IVU. Sonography does have a place in the imaging of urolithiasis particularly in young patients and in young women where radiation is a concern.

While overall sonography is less accurate, consider sonography first in younger adults, females of reproductive age and patients with multiple previous investigations using ionising radiation.

By Alan Clanachan

References: Journal of Ultrasound in Medicine Nov. 2012 and Journal of Urology Oct. 2009.



Lakes Radiology and Scion Partner in New Timber Drying Technology

Lakes Radiology is currently partnering with Scion to scan timber in our CAT and MRI scanners at our Rotorua clinic in order to help create an innovative new way to dry timber without distortion.

Moisture content within the timber during all stages of the drying process is key; drying it quickly and evenly is of the utmost importance. What better way to see deep inside a piece of timber for evenly distributed moisture than a CT scan or MRI scan?

Delia Dephoff of Lakes Radiology and Slobodan Bradic of Scion have been tirelessly working together to carefully scan timber on a regular basis in order to extract data to streamline and hasten the drying process.



"Delia has been really brilliant and is a great person to work with. She is passionate about her MRI and CT scanning work and does a wonderful job," says Slobodan.

Scion is a New Zealand Crown Research Institute that specialises in research, science and technology development for



the forestry, wood product and wood-derived material and other biomaterial sectors.

Dephoff says, "It has been fun working with Slobodan and a challenge in having to think about and adapt technical factors to give the best imaging results in this instance. Also wood is much easier to scan than people as it doesn't move! To be part of research is very exciting as it may result in changes to how wood is dried in the future."

Being interested in innovation, Scion borrowed the process of drying from the food industry and it is being applied to the timber industry with great success. The first set of samples have been scanned and are currently embarking on the next set of scans.