The supposition of the mechanism of escitalopram makes a dopamine nerve activity rise by inhibiting corticotropin-releasing factor to the non-organic-pain
～A SSRI application is desirable for a non-organic-pain～

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Summary
Although escitalopram (ESC) is no having dopamine (DA) transporter (DAT) inhibitory-action, having dopamine nerve (A10 nerve) stimulus operation by the ESC used basic experiment is reported. We supposed the mechanism that the DA increases and it supposed the mechanism that makes a non-organic pain disappear with ①5-HT reinforcement of the descending pain modulatory system, ②the opioid receptor activation with the descending pain modulatory system, ③negative emotion block from the amygdala and the hippocampus to the nucleus accumbens, ④5-HT$_{1A}$ receptor stimulation from the activation of the amygdala, ⑤DA-phasic activity activation.
As a result ④ and ⑤ two items were an operation with a main restraint mechanism of a non-organic-pain. ESC is different from other SSRIs, and we know that ESC make a DA increase at the VTA. We supposed amygdala that a functional depression declined by corticotropin-releasing factor (CRF) is improved with ④ and ③. After DA stimulate by A10 nerve, DA is undergone metabolic change to, and the endogenous opioid　peptide (βendorphin) is made.

Key Words: escitalopram, A10 nerve, non-organic pain, descending pain modulatory system, βendorphin

I　Introduction

At the life-support of the animal which contains a human being, it is important as for the feeling of pain, the pressure of the postoperative pain, neuropathic pain or pschosocial background in addition to the inflammation are merely influenced by more than one piece of cause. As for the glossodynia which is the typical affection of the non- organic-pain of the maxilla-facial area, the cause isn't clear yet.　In the ambulatory-practice, it is one of the affections most anxiously in the diagnosis and at the medical treatment. At meals, the tongue pain often reduces and it often disappears but daily, it appears something like the inflammatory diseases. Specifically, it experiences a lot of examples to occur more often and to complain to the woman of the convex experience which is in the cancer age of them as the cancer phobia, too. Therefore, it thinks that it places a glossodynia as so-called non organic chronic pain disease.

ESC is SSRI of having DAT inhibitory-action which is not. Having DA nerve (A10 nerve) stimulus operation by the basic experiment which used ESC is reported[1),2)]. However, until the present, a reason to the fact isn't made clear. At this article, it supposed about the logical background the mechanism of ESC makes the A10 nerve activity rise by inhibiting CRF to the non-organic pain in the mouth and face area.

Ⅱ Methods

We reported the pharmacotherapy by ESC of SSRI to 50 cases of glossodynia that is a non-organic-pain[3),4)]. As for the expression of the early painkilling effect, it seemed with possibility of the restraint, ①5-HT reinforcement of the descending pain modulatory system, ②the opioid receptor activation with the descending pain modulatory system[5)], ③negative emotion block from the amygdala and the hippocampus to the nucleus accumbens, ④5-HT$_{1A}$ receptor stimulation from the activation of the amygdala, ⑤DA-phasic activity activation (Fig.1). In this time 10 non-organic-pain cases disappeared early were considered that the chase result of the lightness. Eight cases was disappeared non-organic-pain in about 2 weeks. But two cases of 10 that flared up again continued ESC after the symptom disappearance. As the reason it considered the action mechanism that the decrease a little less than an analgesic effect takes from some cases of exacerbation, making above ① to ⑤ the basics (Fig.1).

Ⅲ Results

As a result, it was not straight course and the reinforcement of the indirect DA isolation through the 5HT$_{1A}$ autoreceptor on the somatodendritic of the 5-HT nerve was thought of.

It thought that ④ and ⑤ two items were an

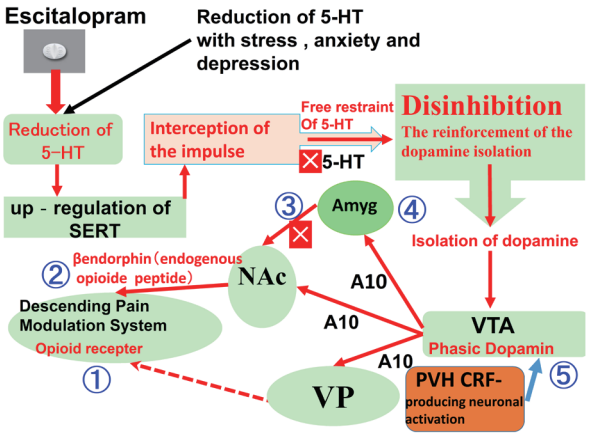

Fig.1 As for the expression of the early painkilling effect, it seemed with possibility of the restraint ① to ⑤

operation with a main restraint mechanism of a non-organic-pain. Because exacerbation of a non-organic-pain prescribed ESC repeatedly, the activation of a 5-HT nerve by the desensitization of a 5-HT$_{1A}$ autoreceptor happened. It supposed the possibility a little less than that a ①, ② and ⑤ mechanism brought about the effect decrease.

Ⅳ Discussion

The remission or disappearance of the chronic pain by tricyclic antidepressants (TCA) have been always accepted in the clinical scene. In recent years, new anti-depressants of SSRI or SNRI and so on became clinical and available in Japan and the width of the choice spread. However, there is little effective report to the non-organic pain in Japan to SSRI that an adaptation disease does not have an effect. We reported because it verified the effectivity of ESC of SSRI for the glossodynia which is accompanied by an anxiety disorder or depressive state. Moreover, the production of effect was added considering about the permitted action mechanism from the early stage[6)].

On the other hand, although ESC is no having DAT inhibitory-action, having A10 nerve stimulus operation by the ESC used basic experiment is reported[1)2)]. However,

until the present, a reason to the fact isn't made clear. Moreover, recently the CRF was reported to inhibit activity of A10 nerve[7]. The 5-HT and DA in a brain decrease in a stress and chronic pain[8)9)]. Hereupon the DA of A10 nerve in a brain decreases, the mechanism of the nucleus accumbens, the prefrontal-area and the amygdala are decreased too[10)]. The CRF is known to prompt for the isolation of a stress hormone with the peptide secreted in a brain when it receives the various stresses and to cause the stress reaction of all characters. Also, the CRF secreted in the amygdala and so on participates in the occurrence of a negative emotion such as the anxiety and fear, too[7)11)]. ESC is different from other SSRIs, and we know that ESC make a DA increase at the ventral tegmental area[12)] (VTA). We reported already the supposition about whether or not ESC makes a DA increase[4)13)]. We supposed it thought that ④ and ⑤ two items were an operation with a main restraint mechanism of a non-organic-pain. Because exacerbation of a non-organic-pain prescribed ESC repeatedly, the activation of a 5-HT nerve by the desensitization of a 5-HT$_{1A}$ autoreceptor happened. It supposed the possibility a little less than that a ①, ② and ⑤ mechanism brought about the effect decrease. Therefore amygdala that a functional depression declined by RCF is improved with ④ and ③(Fig.1). Moreover, DA stimulate by A10 nerve. After that, DA is undergone metabolic change to, and the endogenous opioid peptide(β endorphin) is made. When the endogenous opioid peptide(β endorphin) combine with the opioid receptor, non-organic pain is disappeared and descending Pain modulation system is activated with ①and ②(Fig.1).

Ⅴ Conclusions

From the beginning, although ESC is no having DAT inhibitory-action, having A10 nerve stimulus operation by the ESC used basic experiment is reported. We supposed the mechanism that a DA increases and it supposed the mechanism that makes a non-organic pain disappear with ① to ⑤(Fig.1). As a result ④ and ⑤ two items were an operation with a main restraint mechanism of a non-organic-pain. CRF secreted in an amygdala and so on participates in the occurrence of a negative emotion such as the anxiety and fear. ESC is different from other SSRIs, and we know that ESC make a DA increase at the VTA. We supposed amygdala that a functional depression declined by RCF is improved with ④ and ③.

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